Gas Journal

LIGHT - HEAT - POWER - BY-PRODUCTS

Vo. 245. 97th Year. LONDON, FEBRUARY 14, 1945. Registered as a Newspaper. No. 4265. Price 1/-

LOOKING FORWARD...

CAN we look forward to the day when the machine will be the slave of mankind? When industry will be operated from a control panel, and humanity released to fulfil itself in higher spheres. One thing is certain; the post-war years will see great strides forward in industry with the spirit of coal playing a vital part. And gas has to be measured accurately, so . . .

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For the Industrial load

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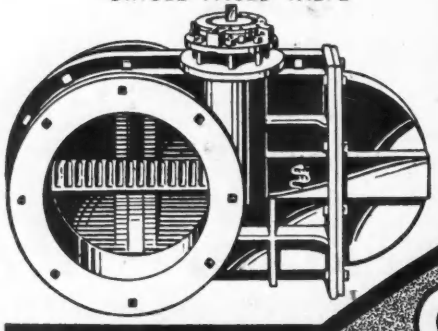

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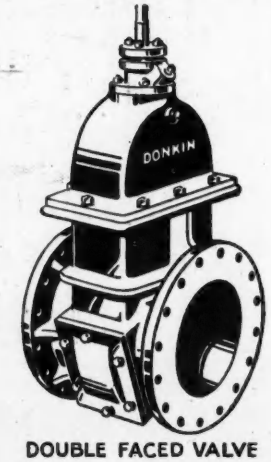

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GAS JOURNAL, FEB. 14, 1945

VOL. 245 97th YEAR No. 4265

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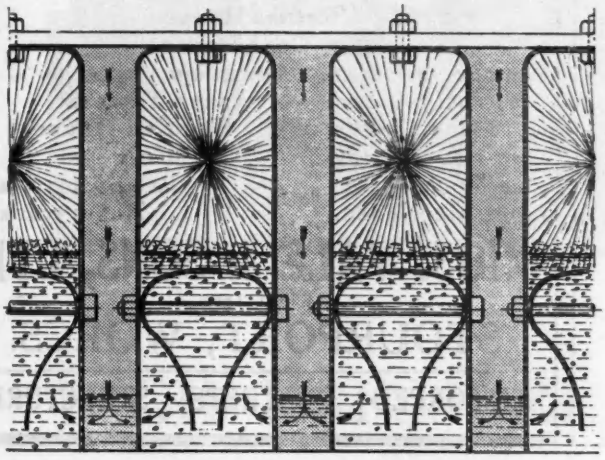
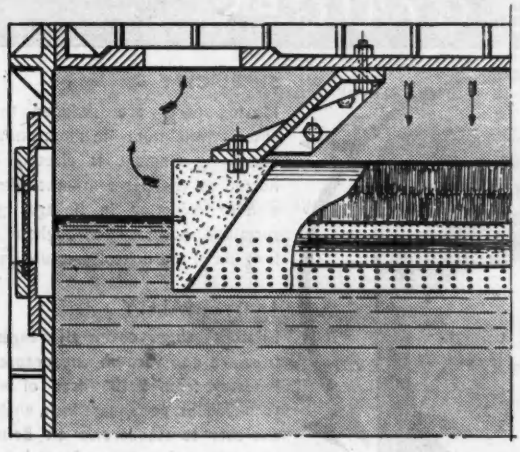


Cross section of the Improved Washer, showing the Wired Bristles and Deepened Tubes.

Part section of Washer (below).



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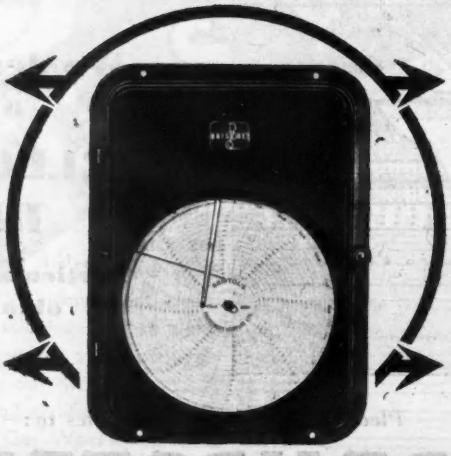

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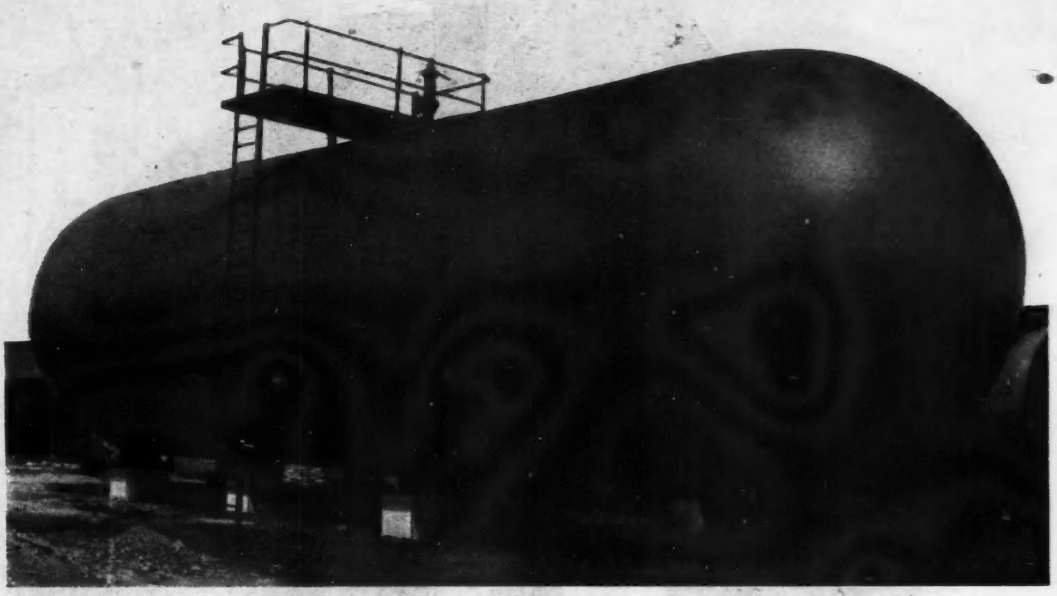

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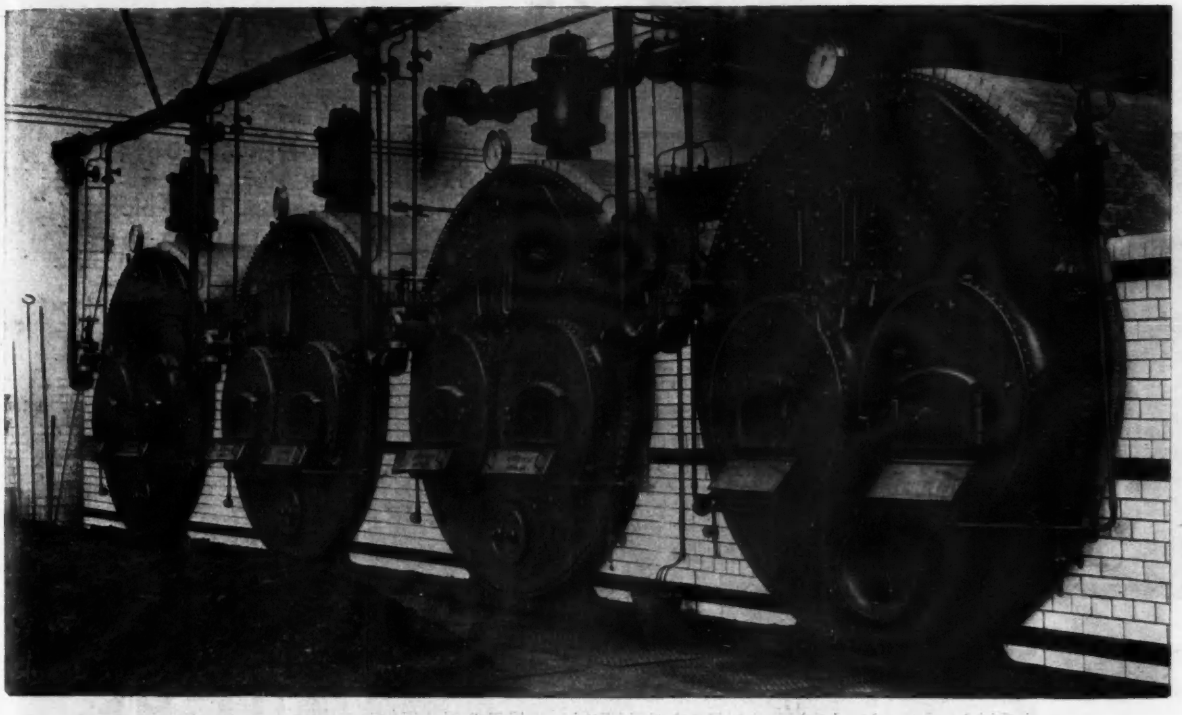

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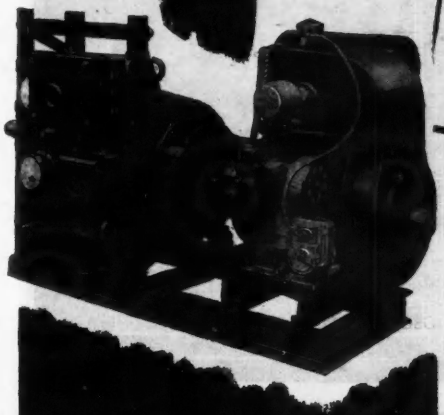

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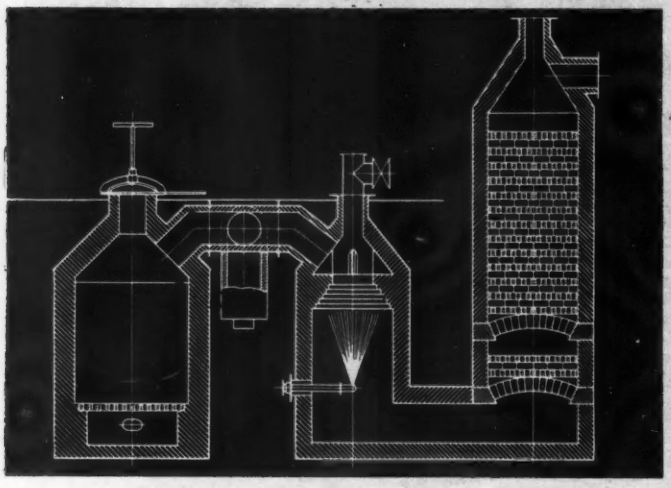

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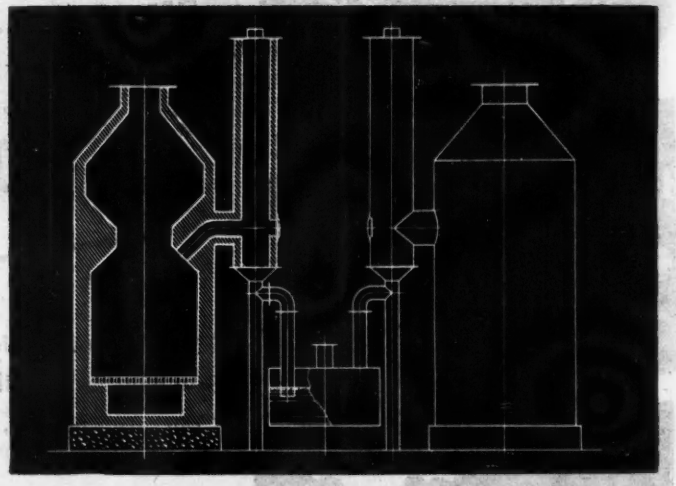

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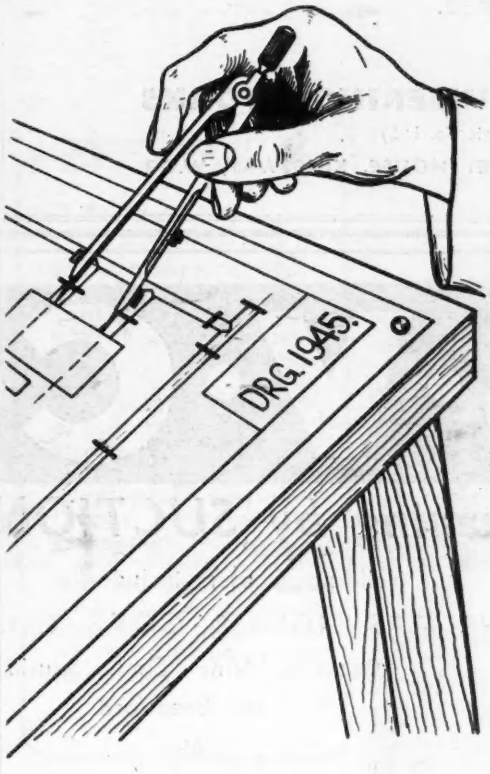

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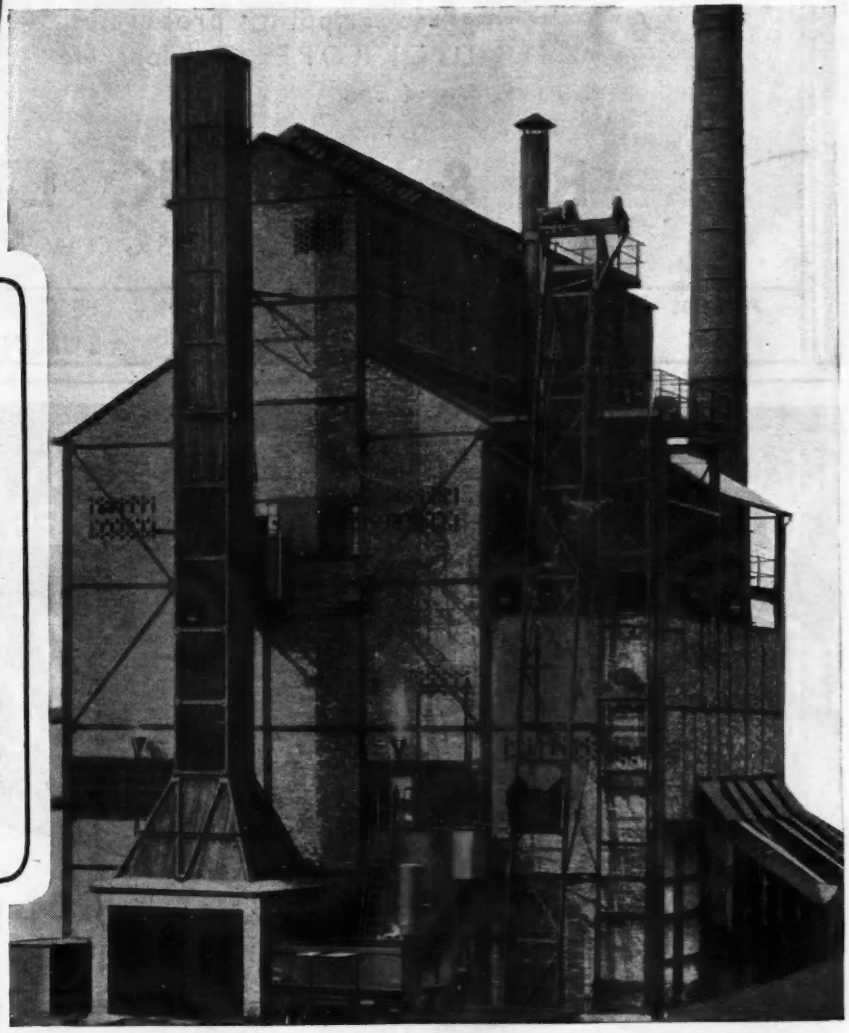

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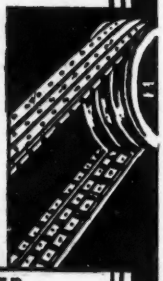

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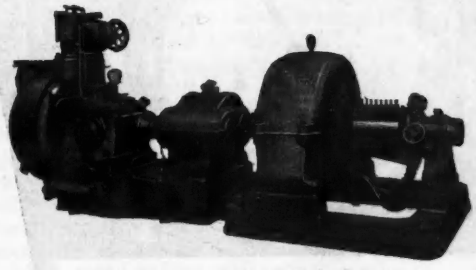

300 kW Back Pressure Geared Turbo-Generator.

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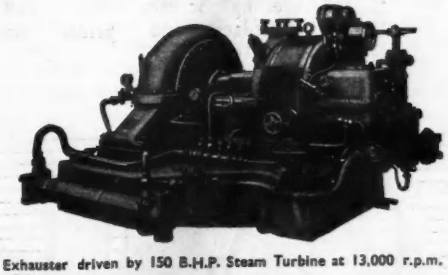

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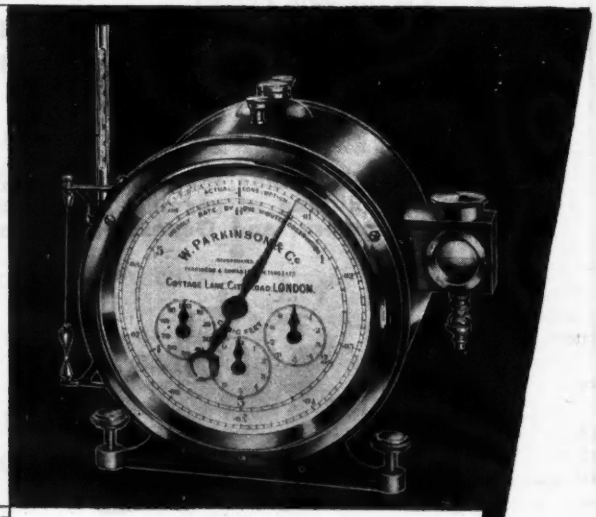

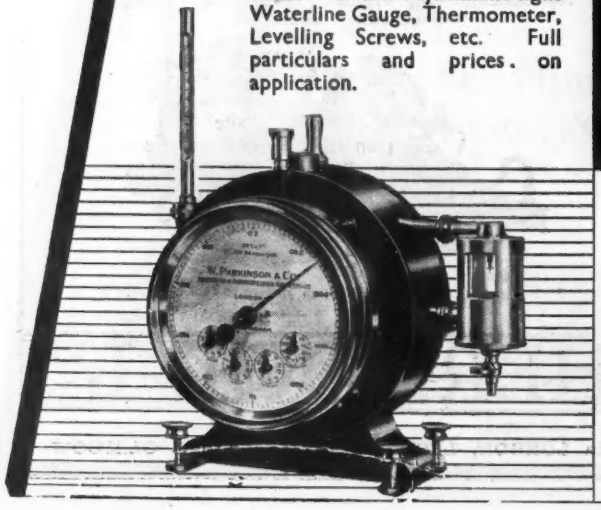

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EDITORIAL NOTES

MODERN, PROGRESSIVE, PURSUING CO-OPERATION

THE opening ceremony of the Gas Industry's colourful and imaginative Kitchen Planning Exhibition last week was altogether cheerful and encouraging. The Industry, through its representative Domestic Heat Services Committee, has so obviously put in a great deal of work in preparation for this attractive and constructive expression of some of its ideas regarding the service it is prepared to offer in furthering and fulfilling the aims of the vast housing programme of the country. This work, this necessary endeavour, has had immediate and, we think, far more than transitory, reward in the spontaneous and enthusiastic reception which the effective Dorland Hall display has met from all interested in and concerned with this first-priority task, and particularly we would mention the Government departments engaged in the planning, building, equipping, and servicing of new homes.

It is the opinion of Lord Woolton, the Minister of Reconstruction, who declared the exhibition open, that the Gas Industry has shown unmistakably that it is working along the right lines, that it is modern, progressive, and pursuing co-operation in both deed and spirit. He expressed admiration of the broad way in which—as vividly exemplified by the exhibition—our Industry is tackling the problem of post-war planning. But Lord Woolton went beyond this. "I came," he said, "to do more than open this exhibition. I came to praise the work which your Industry has done in the past. I wonder whether the public realize sufficiently how much we owe to you." The Minister was referring to the part played by the Industry in overcoming difficulties in the maintenance of a vital public service during the trying and arduous time of the blitz. And he mentioned, too, his experience of the Industry in the early days of the war, at the time when he was Minister of Food. Again we may be pardoned for underlining his comments here: "You came along straight away offering us very highly skilled services. . . . Your demonstrators helped us to educate the public to new conditions, something for which I have reason for gratitude." Similarly on the occasion of the exhibition's opening the Minister of Fuel and Power paid high tribute to the services of the Industry, and spoke of the potentialities which lie ahead. Simple, straightforward statements; important, though.

We publish a full report of what the Ministers had to say about the exhibition and about the Gas Industry generally on later pages. We have taken a few quotations from their speeches, not because we think our Industry has any desire to bask indefinitely and contentedly in the sunshine of Government blandishment. On the contrary, we feel sure that what has been expressed about the Industry from high quarters during the past week—and we like to think that it is deserved—will be a spur to further effort as well as a source of present, and indeeed justifiable, pride. But there is another thought which to us takes prior place among impressions gained of the warmth of welcome accorded the Industry's wartime, and hence circumscribed, effort in educative, informative, intelligent display.

The exhibition is a Gas Industry show—the first of its kind in the particular sphere which it sets out to cover. The exhibition, with sectional interests pooled, welded together, coherent and co-ordinated, speaks with one voice. And it synchronizes, fittingly enough, with the formation of the British Gas Council under the Chairmanship of Mr. A. E. Sylvester, again a measure of unification of the greatest importance. Both Lord Woolton and Major Lloyd George expressed, each from his own particular viewpoint, their satisfaction at this move towards Gas Industry unity. We are, of course, gratified with what was said last week concerning the Industry's war services. Equally we feel that the whole atmosphere of the official launching of the exhibition gives rise to justifiable optimism that, however well served by our Industry the nation and the community have been in the past, they stand to be still better served in the future.

DOMESTIC HEAT SERVICES

VERY properly, the Kitchen Planning Exhibition, which, by the way, has been widely noticed in the Press—it is news value—is in the limelight. Important as it is, however, it represents part only of the constructive work of the Industry's Domestic Heat Services Committee; and we greatly welcomed the account given by its Chairman last week of the Committee's general activities since its inception and of its future aims and objects. We shall publish this account, the subject of a Paper to the Eastern District of the Southern Association of Gas Engineers and Managers, in due course in the "JOURNAL," but we should like to single out right away one aspect of the Paper—that relating to the provision of heating services in the new temporary houses. To our mind Mr. Brown's comments on the matter of gas *vis-à-vis* electricity in this regard were of very great importance indeed.

Of late we have written at some length on this subject, pointing particularly to the current tendency of many housing authorities—local authorities composed of men and women who, however public spirited, know little about fuel economics and fuel conservation, as the arguments in council chambers (*e.g.*, "JOURNAL" of Jan. 31, p. 145) so abundantly prove—to favour the installation of electricity in new housing. So many housing committees appear to be lightheartedly and irresponsibly pro-electric. The electrical industry itself is pushing forward with domestic equipment, building-up loads to make the peak demand factor a source of still further anxiety. Now in this connexion Mr. Brown referred specifically to the recent Memorandum, issued jointly by the Ministry of Health and the Ministry of Works, dealing with temporary accommodation and designed for the guidance of local authorities. In that memorandum it was stated that all houses on one site must have either gas or electricity for cooking and domestic laundry; "individual variations," said the report, "cannot be allowed." What interpretation should be put on the word "site"? Presumably the consumer, who has to pay for his gas or his electricity, is to be allowed reasonable freedom of choice. If "site" were limited to the area of one house, then there would be freedom of choice. Where would be the freedom of choice if "site" comprised the whole of a large area? When considering the relative claims of gas and electricity, each site, Mr. Brown argued, should be divided economically into two parts; and—this is the important point—these two parts should be roughly proportionate to the relative preferences which, taking into consideration cost of supply and the factor of national interest, consumers are estimated to have for gas and electric cookers.

Before the war, to cover the cost of the purchase of bulk supply of electricity together with capital and other charges, an average revenue was needed equal to something like 45% of the total capital outlay on electric mains and services. With developing domestic load it is difficult to see how the electrical industry can do otherwise than increase the cost of current to the consumer. At the outbreak of war average revenue for all

purposes, as Mr. Brown pointed out, represented a penny a unit. For domestic cooking and heating, tariff rates were available of the order of a halfpenny a unit. On these special rates an electricity load of nearly 4,000,000,000 units a year was built up, corresponding to 17% of the total electrical output. This was not a high level; even so, cooking and heating peaks were causing serious embarrassment to electrical supply undertakings. And yet, it should be emphasized, the electrical industry at that time was meeting not much more than 10% of the heating and cooking load carried by the Gas Industry. The proportion of gas to electric cookers was ten to one.

In 1939 there was in fact discussion in electrical circles of the possible injustice caused to certain classes of consumer by the low rates charged by many electrical undertakings for current used for domestic cooking and heating. It was argued that electricity at a halfpenny a unit was possible economically only when the consumption did not affect the peak load—in other words, when in effect the domestic cooking and heating load could be subsidized by the relatively high rates charged for lighting. We recollect contentions like this: Suppose that the fixed charge for electricity supply to undertakings from the grid is £3 per unit of maximum demand. Consider the effect of even a two-unit electric fire when put into use on the maximum demand. Assuming the fantastic load factor of 25%, which means the use of an electric fire for 12 hours a day for six months of the year. At £3 per unit of maximum demand the standing charge would be £6. The cost of the units delivered by the undertaking would, at 0.284d. per unit from the grid to the undertaking, amount to £5 3s. 8d. The revenue at a halfpenny a unit would be £9 2s. 6d. The loss would be £2 1s. 3d. We suggest that these figures, assumptions, it is true, were not very far from the mark in many cases. And what would happen if, during a cold snap, a consumer increased to, say, 20 units of heating. Such a demand actually arose pre-war with a consumer in a small three-bedroom house.

As we have said, pre-war the electrical industry was meeting not much more than 10% of the heating and cooking load carried by the Gas Industry. If the cooking load were divided equally throughout the 4,000,000 or so additional houses to be erected, this, as mentioned by Mr. Brown, would double the domestic heating and cooking load carried by electricity. Pre-war, domestic lighting represented some 25% of the domestic electricity load. If the electricity used for cooking or heating was doubled and the domestic price was to cover the cost of supply, either the price of electricity for lighting would have to be greatly increased, or the price of electricity for cooking would have to be raised. It seems certain that arbitrary or irresponsible action to accelerate the introduction of electricity for cooking and heating must be at the long-term expense of the occupiers of the new houses. And we thoroughly agree with Mr. Brown's contention that it is time that the problems which face us in this domestic sphere were set down and a united effort was brought to bear to find a common solution, or at least to find agreement on the principles involved. In this regard the Domestic Heat Services Committee has done and is doing exceedingly useful work, the ultimate value of which depends on agreement and co-operation within the Gas Industry itself.

DEMOCRATIC COMPULSION

WE make no apology for referring once again to the reorganization which is taking place at Gas Industry House. The more thought that is given to it throughout the country, the sooner is the movement likely to spread to all the Districts to the lasting benefit of the whole Industry. We are therefore very pleased that a provincial correspondent argues with us on the comments we made last week. While generally in agreement with our summing up of the situation, he boggles at our suggestion that it would be undemocratic to compel sectionalized interests to join an all-embracing national gas body. "I submit," he writes, "that there is nothing undemocratic in such compulsion. Does not democracy mean the rule of the people? And can the people rule if some of the people are permitted to contract out of the instrument of government? What was the issue in the American Civil War? No, sir; make your ruling body as representative as possible, make sure that every constituent has a voice in the decisions, but then there must be compulsion somewhere. Democratic rule; but rule none the less. Otherwise you don't get democracy, but anarchy."

If the principles of national politics can be applied to the organization of a complex technical industry, obviously our correspondent is on quite firm ground. Even if, as we maintain, they are not applicable, his remarks none the less merit careful consideration by both planners and planned-for. But when it comes to working out a practical solution of the problem on the lines he indicates, it must be remembered that the "sectionalized interests" actually quoted by Mr. Norman Hudson were "such as coke, tar, benzole, industrial centres, women's councils, and the like." Whereas some of these might reasonably be regarded as subject to the will of the Industry as a whole, others are by no means its private property to be directed into this or that body. Moreover, the Gas Research Board and The Institution of Gas Engineers would be most desirable partners in any national organization, but cannot, for obvious reasons, be compelled even democratically, while for our part we should be extremely sorry if we had to believe that no means can ever be found to enlist the help of the S.B.G.I., with its knowledge born of years of experience and its view of affairs from a different but none the less important angle, in the general counsels of the Industry.

So we return to our original thesis that the principal obstacle to a general amicable union has been removed by the merging of the two main administrative bodies, and with help and encouragement the rest should follow naturally by evolution. Finally, we would remind our correspondent that we made our opinion quite clear last week that we regard the function of the Headquarters organization as advisory, co-ordinating, and representative; as the mouthpiece of the Industry, not as its ruler. This we consider vital.

STAFF ORGANIZATION

AS the Gas Industry in general has seen the need for greater co-ordination, so the staff workers in the Industry are moving gradually and harmoniously towards co-operation, not because of any immediate grievances, but because of the recognition of the importance of the human element, and the fact that the Gas Industry of the future will be no stronger than its personnel. Throughout the long history of the Industry the relations between management and staff have left little to be desired, and there are many people who would prefer to leave well alone rather than bother about joining an association, but, while the war has stressed the need for greater co-operation in the Industry, wartime legislation, particularly the Conditions of Employment and National Arbitration Order, 1940, has made it clear that the Government desires that all branches of industry should provide local, regional, and national negotiating machinery.

Some of the larger gas undertakings have long had their staff committees and other facilities for discussing staff problems, and one at least of the provincial undertakings—Newcastle and Gateshead—has had an Officials' Guild for a quarter of a century. Interests of the staffs of municipally owned gas undertakings are to a large extent looked after by N.A.L.G.O., but generally speaking the gas staff worker, content with his job, has never enthused over the idea of organizing. As with the Industry itself, the wide differences between the very large and very small undertakings, two-thirds of them owned by companies and the rest by local authorities, have further tended to discourage anything in the way of regional integration.

London—or to be more exact, the staffs of eight of the gas companies in the Greater London region—has now had about a year's experience of the operation of gas staff associations, and the provinces are beginning to be interested. The position to-day is that there are (*a*) the Gas Staff Association, comprising a majority membership of the staffs of four London and three

provincial companies, and (*b*) a separate gas staff association for each of four other London companies. The former has nine branches in London, one each for the six areas of the Gas Light and Coke Company, with a co-ordinating committee to look after matters that are of common concern to them all, and one branch each for the three smaller companies, the Commercial, Hornsey, and North Middlesex. Branches have been formed at Aberdare, Bridlington, and Kettering, and the staffs of over 20 other provincial undertakings have enquired about the constitution and objects of the movement. Quite a lot of voluntary work has been put into the Association, and in the near future a general meeting will be asked to consider the appointment of a paid full-time organizing secretary. Croydon, Tottenham, Wandsworth, and Lea Bridge each has an association of its own, with a central committee to co-ordinate their general interests. Both the Gas Staff Association and the Central Committee of the other four associations have been recognized by the Federation of Gas Employers, and there has been informal discussion regarding the co-ordination of negotiating machinery between the two bodies and the Federation. Their objects are identical in spirit if not in letter, and there is every prospect of friendly co-operation to their mutual advantage. The fulfilment of those objects calls for early agreement on the form of negotiating machinery to be set up in readiness to deal with any matters that call for discussion on behalf of the members.

There are bound to be many problems in the immediate post-war period on which the Industry will be glad to have the considered views of their staffs. Some of them may concern relations between management and staff within a single undertaking; some may call for regional examination; while others will have a national character. As we have said, the differences between the two forms of organization are differences in the letter rather than in the spirit, and while friendly overtures are taking place with a view to more intimate relationships, it is not for us to take sides on matters of detail. It seems to us that the movement towards integration—towards enabling the individual undertaking, the region, or the Industry as a whole to know what is in the mind of the gas staff worker in general—has been started by men of goodwill. If it continues along the present sound lines, we can only believe that its development into a national organization will be a help to the Industry in the post-war world, and we shall follow its growth with interest, and be ready to give any assistance that may be within our power.

Suggestions for Kitchen Planning

Consonant with the opening of the Exhibition at Dorland Hall the Gas Industry published a 64-page brochure, *Kitchen Planning*, containing plans and suggestions based on joint research by the Industry and Jane B. Drew, F.R.I.B.A. It is a brochure outstanding in the manner in which the suggestions—the outcome of an exhaustive survey of the social and economic aspects of kitchen life, as well as the design work—are presented in text, diagram, and picture. The theme behind the work has been to give a better life to women, within the reach of their post-war incomes, and secondly to provide the right plans to aid our factories when the transition to peace comes. Housing authorities, architects and builders, and the general public, to whom the brochure is addressed, will find its study both pleasurable and profitable. We regard it as a serious and timely contribution to an all-important problem, modern in idea and conception, and full of useful information and imaginative suggestion. A first-class effort, thoroughly practical while being most pleasing aesthetically.

News of Public Affairs

The continuance of Government information services after the war, through departmental units, is recommended by P.E.P. (Political and Economic Planning) in a pamphlet, *Planning*, No. 230, just issued. The conclusion of P.E.P.'s Government Information Services Group that much of what has grown up in the war should be retained follows, in part, from the proposition that the Government are bound to perform a larger function in the social and economic life of the community than formerly. The units, it is suggested, should include the provision of news and information about administrative activity and the background of policy, public instruction on appropriate themes, and advice to their Ministries on public attitudes and opinions. The term "Public Relations" should be abolished and "Information" substituted. A central publicity unit, it is urged, should be set up to provide technical and creative services.

Piped Water for Every House

The Government's proposals for a national water policy, outlined in a White Paper issued last year, are embodied in the Water Bill which has been presented to the House of Commons by the Minister of Health. It proposes to impose on that Minister for the first time the statutory duty of promoting throughout England and Wales the provision of adequate water supplies. The policy is designed to secure that water is provided to meet all the reasonable needs of householders, agriculture, and industry. A preliminary Act passed last year will provide grants to the amount of £15,000,000 to help the extension of piped water supplies in rural areas after the war. A new proposal contained in the Bill is that the present law should be altered to require a local authority to ensure that mains are carried wherever practicable to a point which will enable a house to be connected at a reasonable cost; and that wherever practicable a piped water supply is brought into the house. At present the law is satisfied if a supply of wholesome water, which may be a well, is within reasonable distance of the house.

A New Coalfield

Last week Professor A. E. Trueman, Professor of Geology at Glasgow University, speaking at Nottingham, said that while boring for oil experts of the Anglo-Iranian Oil Company had discovered a new English coalfield. It was situated in Lincolnshire, to the east and south-east of Lincoln, and several thick seams had been proved. The coal was hidden beneath 3,000 ft. of rocks and pits would have to be 4,000 ft. deep to work it. He thought that mining problems would delay exploitation, but when the new coalfield was worked the industrial migration would be likely to alter the whole face of that part of England.

The Importance of Statistics

In a memorandum issued during last week-end the Institution of Professional Civil Servants offers suggestions for the extension of the Government's wartime statistical service, and for its staffing in peace by statistical officers with recognized qualifications. The Institution says that wartime experience has demonstrated the impossibility of operating a planned economy without adequate statistics. After the war the statistical service should collect and publish a continuous series of statistics relating to the economic and social condition of the nation. It should also interpret and enlarge material already covered in part by existing statistics, and explore new fields with a view to providing trade and industry with information which only a Government agency could collect. The absence of recognized school or university training in statistics except as an adjunct to another subject is regretted, and the Royal Statistical Society's scheme for a certificate and diploma in statistics is welcomed. The Institution favours the Society's suggestion that each Government department should have its own statistical section co-ordinated by a central office.

Appreciation

One of the first duties that fell to Mr. J. M. Webber on taking over the Hon. Secretaryship of the Southern Association of Gas Engineers and Managers (Eastern District) at its meeting last Wednesday was to report an apology for absence from Mr. W. A. Howie, who, as far as members could recollect, had never missed a meeting throughout the ten or eleven years in which he had so genially filled the secretarial chair. Nothing less than an accident which had befallen Mrs. Howie a few days before the meeting would have kept him away, and the members joined heartily in sending their sympathy and good wishes for Mrs. Howie's speedy recovery. At the same time warm tribute was paid to the way in which Mr. Howie had always performed his duties as Secretary. As Mr. F. Dawson, the Chairman, said, he has always carried out his work in a most courteous manner, and he has done a very great deal for the Association. There will be another opportunity of expressing appreciation at the Spring meeting of the parent Association in May; meanwhile the appreciation of the Eastern District was ordered to be recorded in the minutes. Mr. Webber was welcomed as his successor, and entered upon his task with the best wishes of all the members.

The fact that goods made of raw materials in short supply owing to war conditions are advertised in the "Journal" should not be taken as an indication that they are necessarily available for export.

The Kitchen Planning Exhibition

Opening Ceremony at Dorland Hall

IN the "JOURNAL" last week we gave a brief impression of the Gas Industry's Kitchen Planning Exhibition being staged at Dorland Hall, London. The official opening ceremony was performed on Feb. 5 by the Minister of Reconstruction. Immediately prior to the ceremony Lord and Lady Woolton and Major and the Hon. Mrs. Gwilym Lloyd George were conducted around the Exhibition. Mr. T. Brown, B.Com. (Chairman, Domestic Heat Services Committee, British Gas Council), presided.

Mr. BROWN, introducing Lord Woolton, recalled his great work as Minister of Food, and said that, although it was a difficult job, there had been no serious shortage of food and little grumbling. Having made so great a success in the past of the task of supplying the country's food, it was natural that he should be concerned with the best means of cooking it. His past job had been to meet the demands of war; his present job was to meet the demands of peace. From food he had moved to cookers, from cookers to kitchens, from kitchens to houses, and from houses to the whole planning of the town and the countryside.

The Government was heartily to be congratulated on its foresight and determination to see that the people of the country were to be housed well and housed quickly. The Gas Industry was anxious and willing to play its full part in the great re-housing schemes. It had an essential contribution to make, for 9½ out of 11 million homes in this country cooked by gas—*i.e.*, 8 homes out of 9.

The Industry had been closely associated with the Government's schemes and, in co-operation with the Ministry of Fuel and Power, had made recommendations to the housing Ministries for a complete labour-saving fuel service. It could claim to be one of the earliest industries to think about the post-war period; indeed, the exhibition was planned some considerable time ago. It was hoped to hold it in June, 1944, but at the Government's request it was postponed, and later developments had led to a further postponement.

Mr. Brown explained that the kitchens shown in the exhibition were designed for various types of home, whether house or flat, and various types of income, from the living-room kitchens for a family in the £4 per week income range up to the large kitchen for the professional man's house. With the exception of the large kitchen, all the kitchens were planned to be run easily and with the minimum of labour by the housewife, without domestic help. The aim had been to plan for every aspect of kitchen activities, and to make the kitchens both efficient and pleasant. He acknowledged also the very generous co-operation of many contractors, and said the whole team had pulled together under the guiding hand of the Domestic Heat Services Committee.

Lord Woolton's Speech

In the course of his speech declaring the exhibition open, Lord WOOLTON said:

I come here to-day to do more than to open this exhibition. I come to you to praise the work that your Industry has done in the past. I wonder whether the public realize sufficiently the debt we owe to you. There were times, during the blitz, when we valued you most highly; and we valued you most highly when we hadn't any gas, when we realized what we were missing. I saw something at the time of the trouble you had, of the speed with which you repaired the mains, under such difficulties, to keep us supplied with gas. That is a matter for which the country has reason to be grateful to your Industry. As Minister of Food I had much reason for gratitude, right from the earliest days; indeed, I believe that the first speech I made as Minister of Food was to your Industry, because you came along straight away, offering us very highly skilled service to go around the country and to try to teach people how to make the most of the small amount of food that they had at the time; and little did they reckon at that time how much more food they were having than they were going to have in the future! The way in which the demonstrators you lent to us helped to educate the public throughout the country to new conditions was something for which I have every reason for gratitude.

A Broad Conception of Duties

Now you come along to deal with the post-war problem, and I am glad to see you have dealt with it so broadly. As I walked around the exhibition just now I found my mind going beyond this country, because when I looked at your most attractive models of kitchens I began to see not only the means whereby we could cook food, but also the means whereby we might get the food to cook. I could see the possibilities of export trade for this Industry, and that is indeed of the greatest possible importance if we are to maintain the standard of living we enjoyed before the war. We shall have to produce here things which are attractive to other countries, so that we may exchange those things for the food which of necessity we must import from abroad.

At the opening of the Exhibition. Our photograph shows Lord and Lady Woolton, Major Lloyd George, Mr. Tom Brown (Chairman of the Domestic Heat Services Committee), and (left) Mr. W. H. Becket (Gas Light and Coke).

There is so much imagination in this exhibition. One of your demonstrators told me, as I was walking around, "We are trying to build the home around the kitchen." I thought that was right, that it represented profound sociological thought, for surely for the great majority of the public the kitchen is the centre of the home. It is the place where a woman spends the greater part of her time; her children are about and—let us be masculine about this—it is the place where at any rate a considerable part of the happiness or otherwise of her husband is manufactured. If we can secure that there are not only attractive kitchens, but efficient kitchens, that the cooking apparatus in the kitchen gets the women of the country more and more interested in the preparation of food, then I think that is a step on the road to happiness which at any rate all the men of the country will welcome. And I was very interested to see that of the comparatively few women architects practising in the country, you should have chosen a woman, Miss Drew, to do this job for you.

Another matter that appealed to me as I walked around was that you were using electricity for what you would regard as its proper uses in addition to gas. Your Gas Council has recognized that gas and electricity can work together in a sort of combined operation in domestic planning, each with its proper place.

I have studied your views on plumbing. When I was just an ordinary business man I had a good deal to do with buildings. It seemed that constantly, when a building had been erected, some man came along and knocked holes in it, in order to install pipes; and when he had finished, another set of men knocked more holes in the building and put in their particular sort of pipes. But from what I saw of your prefabricated plumbing unit we shall arrive at a solution to frozen pipes in winter. Also, I was interested in your use of colour; it is most attractive, and again I am sure it is right. In this country we have not used colour nearly enough; and I hope that when we re-build so many of our houses we shall use it much more fully.

Still another matter in which I am interested is the most careful way in which you have considered design. This really is a matter of national importance. The Board of Trade recently started a Design Council. We must support that, because the more we can improve and encourage design, both in consumable goods and in manufactured goods, the better it will be for British trade. During this war we have demonstrated clearly to the world how superb this nation is when it comes to designing munitions of war. I think we can be equally successful in making the things that will be required for peace. We have been living in austerity for so long that in our persons and in our homes we have become shabby. But within perhaps twelve months of the end of the war, when we get back to peacetime production, we are going to have a sellers' market, and goods will sell easily during that time. Let us see that they are properly designed. Let us not go from the shabby to the shoddy, because shoddy things will not last; they will have no value to permanent British trade, which owes its international position to its reliability.

Benefits of Standardization

I happen to be President of the British Standards Institution, and I see in this exhibition a great deal of standardization of fittings. That is one of the things we must tackle. The individualist character of this nation, each man having what he liked, has resulted in the past, in times when labour was very cheap, in an infinite variety of different sorts of products being made available. We have to build, say, four million houses, and we must use all the organizing capacity we have in order to produce those houses at the lowest possible expense. It means we shall have less variety in chimney-pots. It means that we shall have to go through life with a selection, say, of only a dozen different types of baths, instead of the enormous numbers there are now. But if we can achieve standardization of building materials, then we can get the economic advantage of mass-production; through that we shall cheapen building, and we shall have houses at prices that people can afford to pay either by way of rent or capital. In the exhibition I saw all the possibilities both of design and of standardization which seemed to me may be of economic value to this country, and at the same time may produce goods which will be very acceptable to the housewife.

I declare this exhibition open. I declare that in my opinion—and in this I am fortified by the opinion of my wife, whose opinion is much better than mine—there is much in this exhibition that will save the labour and drudgery of women in the kitchen. That is commendable. I hope your exhibition will be a great success. I hope you will have the courage to do as His Majesty's Government did when it put up some temporary houses, and will say to the women of the country, "Come and look at this and tell us what you think about it." Do not be too up-stage at the criticisms of the user, because the user really is the person who matters. I am sure you will find that criticism very helpful; and I hope you will not delay too long in considering the users' criticism before you put these kitchen parts into production, so that you will be ready by the time we have the temporary or permanent houses which the Government hope to produce as soon as we have finished off our particular business on the Continent which is occupying the building labour of the country at the moment.

Mr. BROWN, in an expression of thanks to Lord Woolton, assured him that the Industry did welcome the criticism of its consumers, and would give that criticism most careful attention. He hoped that soon the apparatus displayed in the exhibition would be generally available.

Tribute to the Gas Industry

Subsequently there was a luncheon at the Savoy Hotel, at which Mr. A. E. SYLVESTER, F.C.A. (Chairman, British Gas Council), presided.

Major GWILYM LLOYD GEORGE, M.P. (Minister of Fuel and Power), proposing "The Gas Industry," said: For nearly three years now I have presided over a Ministry, and one of the main purposes expressed at the formation of that Ministry was that it was necessary that we should utilize the fuel resources of this country in the best interests of the nation. I think most people in this country are agreed that such a Ministry, to co-ordinate the various fuel and power industries of this country, was long overdue; and when we talk of the fuel and power resources of the country, we must mean *all* the fuel and power resources—coal, gas, electricity, and oil.

My connexion with the Gas Industry did not start when I became Minister of Fuel. When I was at the Board of Trade as Parliamentary Secretary it was my special duty to deal with the Gas Industry, and I well recollect those hectic days of 1940, when a great deal of damage was done. I think this country owes a great debt to our public utility undertakings for the services they rendered in those days. I refer particularly to the Gas Industry, because that was my responsibility as a junior Minister. I have known the City of London with something like 20% of its gas consumers without gas, due to enemy action; a number reduced to 10% within a week, then to 5%, and within a very short time the whole supply was restored. Certain accusations were made, in good part, between the gas companies and the Metropolitan Water Board as to the real purpose of the gas main, whether for gas or for water! The point is that the restoration of those services is one of the most remarkable things in the war history of this country. It is a wonderful tribute to the Gas Industry, when you think of the labour situation and the damage to plant, that this great country, with its tremendously increased war effort, has been able to carry on, not merely without diminution, but with a very considerable increase.

Since I became a Minister, naturally my knowledge, and in consequence my appreciation, of this great Industry has increased. We all know that this Gas Industry is vital to our country in peace and in war. And it gives me great pleasure to couple with the toast of the Industry the name of your Chairman, Mr. A. E. Sylvester, Chairman of the British Gas Council. One might almost consider this luncheon as being in the nature of a christening ceremony, because it is not long since the new organization was born, due to the fusion of the National Gas Council and the British Commercial Gas Association. I am delighted that Mr. Sylvester was chosen unanimously as the Chairman of that new organization. Whatever the future of the industries of this country—and various predictions are made from time to time—there is no doubt that it can only be to the national good that Ministers should have a representative body to deal with in any negotiations that may be taking place. I believe that gas has a tremendous part to play in the post-war development of this country and, as you are aware, I have set up a Committee, under Mr. Heyworth, to enquire into the condition of the Industry. On the findings of that Committee a great deal of the future of the Industry may well depend. None of us knows what those findings will be; but it is our duty to look at those findings, and any recommendations the Committee may make, in one way only, from the point of view of whether or not it will benefit this nation and its people to give effect to those recommendations. There can be no other test; and I am satisfied that we can rely on this great Industry to apply that test. I know that if we work together it will be to the benefit of the country, and of real assistance in overcoming the tremendous difficulties with which we shall be faced.

A Major Asset

Mr. SYLVESTER, responding, said: It is my pleasant duty—as spokesman for the Gas Industry—to thank the Minister of Fuel and Power for the very kind things he has said about the Industry. The story of the Gas Industry, its past, its wartime effort, and its future, provides an important chapter in the larger story of our country, and it is too often misunderstood and underestimated.

Our real importance in the national economy lies in this—that we provide a method of making the most of our coal resources. I am no scientist, but I do know that coal is the basis of our national life and prosperity. A substantial part of our coal is suitable for carbonization, and the Gas Industry, together with our friends the coke oven industry, do in fact carbonize 40 million tons of it every year, in about equal proportions. Why do we do this? Simply because this coal gives far greater value in use when it is carbonized. If it were not so treated much of its value would be wasted. Who is going to be so foolish as to suggest that this country can afford to waste any of its natural products? Surely we must, as a nation, continue to carbonize more and more of the coal which is suitable for that process. Understanding this, you will not be surprised when I claim, as I do most emphatically, that the carbonizing industry is one of the major assets of the nation.

This, then, is where the story really begins. At the other end we have the public demand for the things which are brought out by our process: gas, coke, tar, benzole, ammonia, and a progeny quite bewildering in its diversity which I need do no more than hint at—drugs, fertilizers, explosives, dyes, plastics. And all of these things are in great and ever-growing demand, both in industry and in the home.

The Gas Industry is looking forward. It is not an old industry, for it came in on the surging tide of the industrial revolution, along with many other of our staple industries. It employs capital directly in gas undertakings of nearly £300,000,000, and 120,000 men and women are engaged in this branch of public service. I have said we are looking forward. We are doing what every well-advised industry in this country is doing—preparing to give that better standard of public service which will be required of all of us in the post-war world.

The Minister has told you of one of the important steps we have recently taken. The two bodies which have represented the Industry nationally in different spheres have joined forces in the British Gas Council. During the next few weeks the public will be able to see at Dorland Hall where our ideas are tending in the important matter of kitchen planning. You will not need me to tell you of the difficulties met with in preparing an exhibition of this kind under war conditions. But it is clear that the planning and equipping of kitchens is perhaps the most essential part of the post-war housing problem. The kitchen is the centre of the home. Here, then, is our contribution to it, and I must tell you briefly how it has been done.

Genesis of the Exhibition

Some 18 months ago a Committee—called the Domestic Heat Services Committee—was set up to tackle the problem. They appointed Miss Jane Drew as architectural adviser, and she made an exhaustive study of the subject, and in particular the causes of drudgery and how they might be eliminated. Miss Drew visited America on our behalf and consulted experts of many other countries. I would like to pay a tribute at this point to the enormous amount of work done, not only by Miss Drew and her staff, but by the members of the Domestic Heat Services Committee under the able Chairmanship of Mr. T. Brown. The results achieved by this Committee have been seen this morning at the Dorland Hall Exhibition, which is a life-size demonstration of the practical application of research to the abolition of domestic drudgery. Further evidence of the Committee's work has already been seen in the fuel equipment in the Ministry of Works temporary houses at the Tate Gallery and in the experimental houses at Northolt.

No doubt you have been thinking mainly about the new houses which will have to be provided after the war, but there is also the colossal programme of adaptation and conversion which will be necessary. To give you an idea of the amount of work which will

fall on the shoulders of our friends the appliance manufacturers I will quote you one figure—over 800,000 gas cookers were being produced annually just before the war for new and existing homes. The public wanted them. When you consider the extent of post-war housing schemes, you can form some conception of the magnitude of the task. We are, however, very fortunate in having at our side a well organized and most helpful body of appliance manufacturers.

In face of such evidence of the overwhelming demand for gas cookers, is it not surprising—to say the least—that a number of local authorities up and down the country are at the present time using their powers to prevent the installation of gas cookers in housing schemes? Such a procedure cannot in our view be justified on any grounds, but we are hopeful that wiser counsels will prevail, for the people of this country will, surely, never consent to such dictation or regimentation.

In this matter, as in the broader issues, the policy of the Gas Industry is clear. We say that the fuel situation must be considered as a whole, and that separate sectional interests—coal, gas, or electricity—must be subordinated to that view. We further believe that the solution of the problem will be found in the general proposition that the consumer shall be free (within all practical limits) to choose the fuel he prefers on the condition that the price he is charged is based upon the cost of supply. This is not the time for me to deal with the implications of this proposition, and in fact it has now become the business of the National Fuel Council recently set up by the Minister under the Chairmanship of Sir Ernest Simon. We wish them well in their labours, and to you, Major Lloyd George, we also offer our good wishes.

Freedom for Development

Dr. E. V. EVANS, O.B.E., D.Sc. (Chairman, British Gas Federation), proposed the toast of "The Guests," all of whom were in one way or another related with the post-war reconstruction of our country; and it was most opportune that the chief guest was Lord Woolton, the Minister of Reconstruction.

In a tribute to Major Lloyd George, Dr. Evans expressed the view that no other Minister had a more difficult task, particularly at the moment. One supposed that when one accepted a Ministerial portfolio a certain amount of ingratitude and professional criticism was to be expected; there were sure to be persons who felt that they could do the job so much better than the appointed Minister. However, the Gas Industry—and he was sure that he could speak for all the fuel industries—appreciated that Major Lloyd George had instituted an efficient Ministry, manned by advisers and officials with whom it was a pleasure to work.

Drawing attention to the fact that the guests included the Parliamentary Secretaries and Permanent Secretaries of no fewer than ten Government Departments, Dr. Evans said he could not refrain from asking them to ensure that, in the reconstruction of our homes, the Gas Industry was given a fair chance to render its services. During the five years of war the Industry had not been twiddling its thumbs, and it was eager to put into practice the newer ideas and processes, appliances, and so on. But the representatives of the Industry must be in the homes in order to do that. They did not ask for special privileges. It was not wholly a question of freedom of choice for the consumer; it was also a question of freedom for the important Gas Industry to develop itself. It was a costly and a most uncongenial task to have gas instituted after a house was built, and the cost was about three times as great as it would be if gas were installed when the house was built. In each home in the future gas and electricity should be provided, with at least one gas point and one electricity point in each room. That was also one of the fundamental recommendations made by Sir Alfred Egerton's Committee.

Finally, in coupling the name of Lord Woolton with the toast, Dr. Evans assured him that the Industry deeply appreciated what he had done for it that day.

Lord WOOLTON responded on behalf of the guests.

Personal

Mr. P. R. DAWSON, Assistant Engineer and Manager of the Wisbech Lighting and Water-Works Companies, has been appointed Deputy Gas and Water Manager at Barrow-in-Furness.

* * *

Their many friends in the Gas Industry will join heartily in the golden wedding congratulations being showered upon Colonel G. S. Eunson, D.L., V.D., Chairman and Managing Director of the Northampton Gaslight Company, and Mrs. Eunson, M.B.E., J.P., of Abington Hill.

Diary

Feb. 19.—London and Counties Coke Association: Finance Committee, 11 a.m.; Executive Committee, 11.30 a.m.; Central Committee, 1.30 p.m., Gas Industry House.

Feb. 23.—Institute of Fuel: Joint Conference with National Smoke Abatement Society.

Feb. 23.—London and Southern District Junior Gas Association: Gas Industry House, 6.30 p.m. Address by Dr. J. G. King, "Methane Synthesis."

Feb. 24.—Western Junior Gas Association: Meeting at Swindon, 2.30 p.m.

Feb. 24.—Manchester and District Junior Gas Association: Address by Dr. J. G. King, Director of the Gas Research Board.

Feb. 24.—Yorkshire Junior Gas Association: Meeting at Bradford. Paper by A. Cole.

Feb. 27.—Illuminating Engineering Society, Institution of Mechanical Engineers: Storey's Gate, S.W. 1, 5.30 p.m. Address by Dr. J. W. T. Walsh.

Feb. 28.—Institute of Fuel (North-West Section): Conference on Preparation of Coal. Engineers' Club, Manchester, 10.30 a.m.

Mar. 6.—British Standards Institution: Luncheon, Savoy Hotel, 1 p.m.

Mar. 7.—Area Meeting of Institution of Chemical Engineers jointly with South Yorkshire Section of Royal Institute of Chemistry: Scunthorpe. Paper by Dr. E. W. Smith, C.B.E., "Future Aspects of Research for Industry."

Mar. 21.—Southern Association of Gas Engineers and Managers (Eastern District): Gas Industry House, 2.30 p.m. Paper by J. E. Davis (South Metropolitan).

Mar. 22.—Midland Counties Coke Association: Annual Meeting, King Edward House, Birmingham, 2.30 p.m.

In *Punch*, Jan. 24, was the following item under the heading "Charivaria": "New World Gas Cooker, 'Eureka,' 4 burners and 1 toast-burner.'—*Advt. in local paper*. That'll save cook a lot of trouble." Surely a "New World" was not fitted with an electric toaster!

Gas Undertakings' Results

Ipswich.—Net profit of the Ipswich Gas Light Company for the year to Dec. 31, 1944, was £16,404. Payment of dividends at the rate of 5½% per annum on the Consolidated stock and 5% per annum on the Preference stock in respect of the December half-year leaves £13,946 to be carried forward. There was an increase of over 108 million cu.ft. in gas sold during the year, which constituted a record.

Wandsworth.—The accounts of the Wandsworth and District Gas Company show a decrease of 0.8% in gas sold during the year to Dec. 31, 1944. Net revenue carried to profit and loss account was £274,180, against £284,901 for the previous year. Final dividends are recommended at 2% on the 4% Preference stock (making 4% for the year), and 2½% on Consolidated stock (making 5% for the year), the same as for 1943. Total gas sold was 32,694,013 therms, compared with 30,292,421 therms for 1939, when there was a decrease of 3.9% from 1938 owing to evacuation, cessation of public and shop lighting, and the general economy of consumers. Revenue from gas sales, less discounts, amounted to £1,764,195, against £1,161,651 for 1939, rents, £208,096, against £204,502, and residual products, £628,631, against £340,349.

Woking.—After final dividends making for the year 11% on the "A" Ordinary stock, £7 14s.% on the "B" Ordinary stock, 5% on the "C" Preference stock, and 4% on the 4% Preference stock, the accounts of the Woking District Gas Company for the year to Dec. 31, 1944, show a carry-forward of £8,451, against £12,276 brought in. Gas sales at 1,681,885 therms show an increase of 4.8% over the previous year, and compare with 1,206,749 therms for 1939 and 1,150,709 therms for 1938. Revenue from gas sales was £105,076, against £59,868 for 1939, and from residual products, £29,268, compared with £15,088. The total revenue was £146,142, and the net revenue was £14,882.

Watford and St. Albans Gas Company.—Full final dividends on the Preference stocks and a final dividend on the Ordinary stock of 2½%, making 5% for the year, all less tax, the same as for 1943. Revenue profit is £90,563, and the carry-forward on profit and loss account is £53,441. Of this balance, £15,454 is required for the final dividends. (Meeting, Feb. 23.)

Yorktown.—The Directors of the Yorktown (Camberley) and District Gas and Electricity Company report a profit on revenue account for the year to Dec. 31, 1944, of £32,970, against £37,755 for the previous year. Final dividends are recommended making for the year 5% on Consolidated Preference stock, 4% on the 4% redeemable Preference stock, and 5½% on the Consolidated Ordinary stock, leaving £5,217 to be carried forward, compared with £3,821 brought in.

Atherton U.D.C. has agreed to the proposal of the Lancashire and Cheshire Provincial Council to negotiate a scale of salaries with the Association of Municipal Chief Gas Engineers and Managers.

It is Reported from Buenos Aires that the Federal Chamber has rejected the appeal of the Primitiva Gas Company against the Supreme Court's decision ordering the immediate delivery of the Company's property to the Buenos Aires municipality.

The Gas Industry and its Operatives*

By J. H. C. BATES,

Technical Supervisor, Brighton, Hove, and Worthing Gas Company

THE recasting of the national educational system (Education Act, 1944) is evidence of the importance placed on the future education of both young and adult population. It is to this subject that I wish to refer, particularly as it affects Gas Industry "operatives'" future. That adequate provision is anticipated for the professional man is evidenced by recent Papers given to various bodies on the subject. The planning of a national training scheme for operatives would, I feel, complete the picture of what is usually termed "Theory and Practice."

The Education Act, 1944.—The manner in which the Gas Industry will be affected by the new educational legislation is a subject that should be examined carefully. The main considerations as far as the recruitment of young operatives are concerned will be:

(1) Raising the school-leaving age up to 15 years in probably two years' time, and subsequently to 16 years.

(2) The compulsory attendance at County Colleges of young persons up to 18 years of age for a period of approximately one whole day per week for 44 weeks of the year.

If the school-leaving age is raised by the two stages over the next ten years, the numbers of boys available for employment will be approximately half the number available in pre-war years. The figure—3¼ million boys and girls in 1937—at the present time stands at approximately 2¾ millions, and in about ten years from now, with the school-leaving age raised to 16, will be further reduced to the low figure of 2½ millions. The effect of this progressive decline will be likely to lead to an enhancement in the value of juvenile labour, and will reflect itself in the more serious attention that will be given to recruitment and training generally. An enhancement in value will spell greater competition by employers wanting the services of juveniles. If the young person is going to have a greater opportunity to choose the job, then prospective employers must see that the jobs they offer will attract new recruits. There will, I am sure, be keen competition, and it is up to the Gas Industry to formulate a concrete plan of action in order to stake its claim against the future.

In regard to compulsory further education, this is really nothing greatly differing from that now required by some undertakings, and which they are already providing. As the attendance at County Colleges will be compulsory, it would be far more valuable if the classes were run under the aegis of the gas undertaking in parallel with vocational training, so that the maximum value of the combined efforts might be obtained. Here again is where a co-ordinated plan would help the Industry.

The Yorkshire District Gas Education Committee has already prepared a scheme in the light of the future development of education. The scheme was outlined in an Address given by Mr. G. E. Currier to the Yorkshire Junior Gas Association, and I am sure that this will serve as a valuable contribution, along with existing schemes, towards producing a standardized plan for the future education and training of Gas Industry operatives.

The Operative.—Broadly speaking, the operative is the person who does the actual job of work, hence the term "workman." The importance of a good workman has been stressed time and again by all trades in industry. In the Gas Industry the champion of good workmanship, as far as installation practice is concerned, has been Mr. R. N. Le Fevre, who first brought the subject before this Association in December, 1932, when he read a Paper on "Recent Developments in Gasfitting Practice," and he has since made numerous contributions on the subject to various bodies. The opening paragraph in his 1932 Paper is interesting for, although it was written 12 years ago, its meaning holds good to-day more than ever before. It reads: "The gasfitter of to-day is a certified craftsman, who is able to hold his own with the best of tradesmen, who now find themselves called upon to carry out work of the high standard demanded by recent developments in construction and decoration."

The last paragraph in the Paper, which reads as follows, is surely the crux of it all: "The consumer sees more of the gasfitter than any other representative of a gas undertaking. His work remains as a joy or an eyesore for all time. Good gasfitting is, I suggest, one of the best advertisements we have."

Although the qualities referred to by Mr. Le Fevre were applied to gas installation operatives, they should refer, none the less, to all types of Gas Industry operative.

Recruitment and Training from a National Standpoint

All trades in industry employing large numbers of operatives are very much alive to the requirements of the future. National standards of a high prescription are definitely required. The building industry (see Pamphlet dated March, 1943) is, as far as I am aware, the only body outside State-controlled employment which has produced and agreed upon a scheme common to all parts of the country. All the national bodies of the various trades have schemes in hand, and in some areas they are in operation, although, broadly speaking, it is being left to localities to arrange their schemes by local initiative.

The Gas Industry is unique in that all gas undertakings are dealing with similar problems, and market a product—gas—that is common to all. This provides a wonderful opportunity for the introduction of a generally acceptable plan of campaign. Agreement on this principle would not deprive undertakings of their privileges, but would consolidate the position of the Industry in relation to its operatives' good workmanship.

In my travels up and down the country as a City and Guilds Examiner it is extraordinary, I find, how varied is the interpretation of what represents good workmanship, not only from the candidates' point of view, but also from the examiners' point of view. It is only by actually seeing these variations that the need for conformity of practice becomes so obvious.

The operative employed on gas installation and maintenance of gas appliances generally is definitely in the skilled class. Although it is a skill incorporating many other trades which are somewhat peculiar to a gas undertaking, it is nevertheless a necessary skill which calls for the greatest attention. In recent years applied effort has been made to place this trade on a firm and recognized footing, and to raise its status. This type of operative is usually known as a "gasfitter." In order to eliminate the misnomer created by the term "gasfitter," I feel that a change of name would not be inopportune. The number of operatives on this type of work is a very large one. This is to be expected, since most gas undertakings are responsible for installing all the types of appliances they sell. The fact that gas undertakings sell 85% of the total gas appliances marketed from all sources is significant. The total number of operatives employed must be in some direct proportion to the number of appliances sold. The sales of appliances were in 1939 reaching high proportions, as, indeed, were the number of installation operatives. It is in this trade that there is the greatest appeal to the young operative, for two reasons:

(1) Larger numbers of young operatives are necessary for employment on the district than in any other part of an undertaking.

(2) There is probably a greater appeal in travelling round the district, and thus working in changing environment, rather than remaining stationary in a workshop under direct and immediate supervision.

As the installation operative is the one that has direct gas consumer contact and, therefore, requires a considerable degree of detailed knowledge of his undertaking's standards of practice, it is incumbent on undertakings to see that a high degree of skill and efficiency is obtained and maintained. Excellent schemes of training for young operatives are already in being in different forms up and down the country, and thus point the way of a good background for a future supply of the right type of operative.

The training of gas installation and maintenance operatives (gasfitters) is broadly catered for in three ways:

(i) In gas undertakings' training shops and then on the district with fitters, and supplemented with evening class instruction under the City and Guilds of London Institute.

(ii) On the district with the fitter, and supplemented by evening class instruction under the City and Guilds of London Institute.

(iii) On the district with the fitter.

It is obvious from the types of training available that considerable variations in ability must arise.

Installation and Maintenance of Gas-Consuming Appliances

No matter where one reads of gas appliances and their functions, references to service, from either installation or maintenance points of view, are bound to occur sooner or later. In 1936 Mr. C. A. Masterman, in his Paper to the Institution on "Gas Safety Precautions," stated: "That training applies not only to newcomers, but is necessary also with experienced personnel, in order to keep them up to date with rapid progress in appliances and technique now taking place. The aim is to ensure that all district personnel, of whatever grade, are brought up to date by direct instructional courses at least once a year."

References could be given from Papers read by authors of all types representing the Gas Industry, and in each Paper great stress is laid on the necessity for efficient gas installation operatives. Experience teaches that such references are necessary. Although great improvements had been made in the quality of gas installation operatives during the immediate pre-war years, the position regarding recruitment and training methods was still inconsistent. So, in like manner, was

* From a Paper to the London and Southern District Junior Gas Association.

the variation in installation standards of performance demonstrating that "what is one man's meat is another man's poison." The following observations are, I feel, worthy of examination:

(*a*) Criticism in the Press recently of the types of personnel recruited for training as young operatives. This criticism arose out of the results of the 1944 City and Guilds Gasfitting Grade I Examination.

(*b*) Letters to the Press criticizing methods of instruction and giving instances of variance in this respect—*e.g.*, instruction given in the design and operation of district governors to Grade I Gasfitting Students. (This subject does not come within the scope of the Grade I Syllabus.)

(*c*) The introduction by gas appliance manufacturers of training arrangements for gas undertakings' personnel.

(*d*) The very small number of candidates entered each year for the City and Guilds Final Grade Gasfitting Examination. There are approximately 1,149 gas undertakings in Great Britain. If we consider the last 11 years' City and Guilds entries and results, we find that, excluding the war years from 1940 to date, for the preceding six years a total of 1,873 candidates passed the Final Grade Examination as against 2,571 candidates entered. This represents approximately an entry of two candidates for each five undertakings and one success for each three undertakings per year throughout the whole of Great Britain. On the assumption that an operative who passes the City and Guilds Final Grade Examination is a potential first-class fitter, the future prospect of obtaining first-class operatives, according to the examination results, is none too rosy.

(*e*) There is a variance in practice of classifying gasfitters under the various National Regional Industrial Schemes. One scheme makes it a condition in the test for a first class fitter that the candidate should have passed the Final Grade City and Guilds Gasfitting Examination. Another scheme does not mention any outside examining bodies.

Recruitment of Installation Operatives

In regard to the criticisms on this subject, I feel that it is somewhat overstressed at the present time, even though the City and Guilds results in the Grade I Examination do not show up as well as in pre-war years. It is merely a phase, brought about by wartime conditions, and reflects itself in all professional and trade examinations. There is still, however, a certain amount of diffidence about the trade of gas-fitting generally, and the misconception is rife that a gasfitter is a pipe fitter only. Until the syllabuses of training that are necessary to produce a first-class fitter have been studied, one is apt to midjudge the ability of all such operatives. I want to emphasize this point particularly, because there is a tendency for certain operatives who are classified as specialist fitters installing appliances to regard the classification of "gasfitter" as inferior. On examining the syllabus it will be seen that the Gasfitting Course is comprehensive in its make-up, and incorporates all types of pipe-fitting work and appliance installation necessary for our business.

To produce operatives of a quality capable of installing any type of gas-consuming appliance, it is necessary that:

(*a*) All operatives attain the standard of performance demanded by the syllabuses of instruction of the City and Guilds.

(*b*) Pass the Final Grade Examination of the City and Guilds.

(*c*) Pass the test for a Class "A" Gasfitter.

(*d*) Have had sufficient district experience to supplement this initial training.

I am of the opinion that all installation operatives should first of all pass through the gasfitting course and, if they are required for specialist work, receive further instruction in whatever branch is required. This will produce first-class all-round gasfitters with specialist qualifications.

The incentive for youths to enter the Gas Industry must be encouraged by their recognition that it is a progressive industry offering opportunities to become skilled operatives, and not as a home for those having a "safe job" complex. Alleged apathy towards the recruitment of young personnel to the Industry for installation work, in the way in which requests for labour are dealt with by the various Ministry of Labour Bureaux throughout the country, has been the subject of criticism. This state of affairs is not true of all areas. When labour applications apparently are dealt with indifferently by Ministry of Labour officials, I am certain that undertakings in the areas concerned have made a rod for their own backs by accepting indifferent candidates. It is agreed that wartime material is not up to pre-war standards. To get the right material the Juvenile Employment Bureaux must be aware of the quality required and the prospects offered. The "Cinderella" trade complex must be eliminated, and it is up to the Gas Industry to see that it disappears once and for all.

Gas Installation Regulations as a Necessary Background to Training

In August, 1937, The Institution of Gas Engineers issued a publication dealing with regulations covering the installation of gas service pipes, gas supply pipes, and gas appliances. The very nature of the introductory note in this publication damns it with faint praise.

> "These regulations are not intended to take the place of detailed specifications, but to serve as a guidem," &c., &c.

In an addendum containing some very important items relating to safety factors the heading again reads, "Issued for the guidance of undertakings." The Post-War Building Study, *Gas Installations*, issued by H.M. Office of Works, and representing the deliberations of a Committee convened by the I.G.E., takes the matter of practice still further. In introducing the objects and aims of the Committee the "recommendation" aspect is again introduced. The information contained in the report is far too important to bear only a "recommendation" status.

To obtain universal agreement on the establishment of these regulations as a definite Code of Practice would not seem to be difficult, since the Committee, and presumably the witnesses, were all drawn from various gas undertakings up and down the country. I see no reason why gas undertakings should not be asked to agree to the establishment of these regulations in their own area of supply, as supplementary to their existing statutory regulations. If this is done, it would be the first step towards obtaining a common practice which, when once established, would provide the stepping-stone to a standardization in training methods. The value of having an agreed code of practice that is common to all dealing with the same product is emphasized in a tribute paid in the Press recently to the Institution of Electrical Engineers' regulations for the electrical equipment of buildings, when analyzing the Registrar-General's Statistical Report on accidental deaths. The Institution of Electrical Engineers' regulations were acknowledged as having played a great part in reducing the number of electrical accidents and fires. It must be appreciated that most electrical installations beyond the meter position are carried out by contractors. In spite of this, however, the regulations have been accepted in the main by the contractors responsible for installation work. To obtain standardization, with the very considerable number of different types of contractor that electrical undertakings employ for wiring work, is no mean task. I do not set this up as a model, for, as is well known, there are many difficulties in relation to electrical standards. As an Industry we are in a much stronger position regarding our operatives than any other industry, since gas undertakings employ some 90% of the personnel performing gas installation work. The "self contained" aspect of our Industry should make the establishment of standard installation methods and training easy.

Suggested Plan to Meet Immediate Post-war Requirements

(1) To appoint a Central Installations Committee representing the Gas Industry. More than one central committee could be appointed if the geographical circumstances demanded it.

(2) To sectionalize geographically the country into regions, arranging for at least one large undertaking to be included in each region.

(3) To appoint in each region an Advisory Board, consisting of representative officials actually responsible for the control of installation and service work generally, The necessity for regionalization is to provide for areas easily handled for size, and to cater for specialized or local knowledge.

The Institution of Gas Engineers is already informed as to the amount of training accommodation available in gas undertakings throughout the country. This information could form a basis in deciding the nature and size of the regions required. The essence of the plan is dependent on the larger undertakings with training facilities, making them available to the smaller undertakings. The scheme, as a start, would envisage distribution and utilization operatives only, since this is the unit of an undertaking which has the larger complement of operatives needing further training and refresher courses and tests for promotion to higher grades. Also the incidence of development of appliance design and installation is such that the operatives must be kept up to date, bearing in mind their consumer contacts. The carbonizing, mains and services, transport, and other trades operatives could be dealt with eventually by including as members of the Committees representatives who are specialists in these branches of the work.

Scope of Central Installation Committee

1. To sift and prepare evidence relating to installation practice in like manner to the Committee responsible for producing the "Gas Installations" codes of practice, and to draft regulations and keep them up to date.

2. To draft model plans of training and detailed syllabuses of the actual instructional work.

3. To examine the position regarding the reinstatement and training of operatives on their release from H.M. Forces and National Service.

4. To frame standard Forms of Indentures for trainees. The provision of indentures puts a responsibility on both the undertaking and the operative, and stabilizes their relative positions.

5. To suggest suitable types of tools and materials to be used in connexion with the application of suggested regulations.

6. To arrange for the training of lecturers and instructors.

7. To frame tests for the classification of gasfitters that are consistent in all parts of the country, and/or to co-operate with the various industrial councils in bringing existing schemes into line by introducing similar tests.

8. To examine, in conjunction with the appropriate educational bodies, a widening of the scope of the City and Guilds Gasfitting training scheme.

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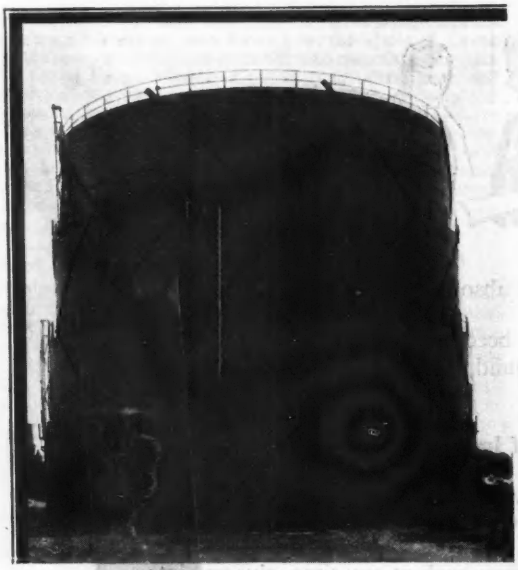

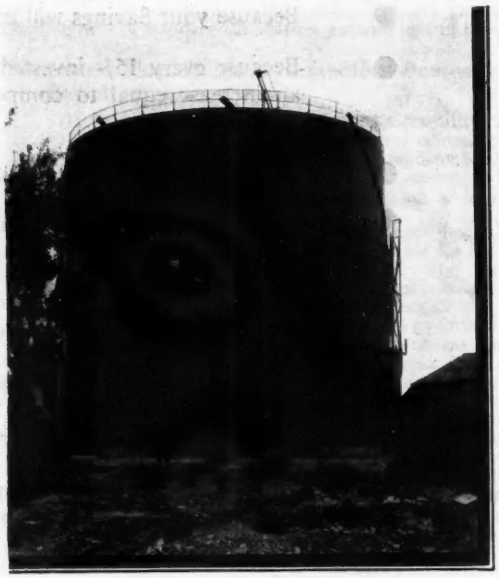

These Gasholders, with capacities of 336,217 and 147,100 cu. ft., replace two single-lift Holders of 95,000 and 50,000 cu. ft. respectively. Thus, the total storage capacity of these two units has been more than tripled without additional ground space, and utilising the existing tanks.

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The results of the deliberations of the Central Installation Committee would be passed to the Regional Advisory Boards (Operatives), whose responsibilities would include:

(1) To represent officially undertakings in the regional area of their operations.

(2) To see that each undertaking in the region appoints a representative who is responsible for installation and service operations, or agrees upon group representation by an official of another undertaking (this would seem desirable for smaller undertakings).

(3) To appoint a representative, or nominate the Chairman, with powers to sit on the Central Installation Committee.

(4) To examine and report on draft schemes submitted by the Central Installation Committee.

(5) To introduce into the region the regulations agreed upon by the Central Installation Committee.

(6) To examine all training schemes and methods in the region with a view to appointing one or more training centres to deal with the operatives in the region.

(7) To offer assistance in an advisory capacity on installation problems as they apply to practice and procedure.

(8) To investigate the possibilities of interchanging staffs during times of peak demand (it has been done in wartime, and should not, therefore, be impossible in peacetime). The interchange of staff between undertakings may prove difficult, since certain aspects of employment relating to pension schemes, co-partnership, &c., might be affected.

Cost

At first blush the foregoing suggestions may cause a raising of hands in horror in protest. Likely questions to be asked will be:

(*a*) How can we release our men for tests and training courses? (Smaller undertakings who employ only two fitters and mates will be more affected—*i.e.*, where the release of a fitter or a mate represents a loss of 25% of staff).

(*b*) What about the cost of the man's time while attending the course?

(*c*) What charges will be made for the various courses?

The release of staff for training is a problem which must be faced. I am of the opinion that undertakings do not provide a sufficient reserve of operatives for possible laying off for training, or for wastage from sickness and other reasons. It is impossible, however, to budget for a staff capable of meeting all peak demands. The matter is one worthy of examination. I have already suggested that an interchange of staffs between undertakings might meet the case. The subject is somewhat controversial, and would need careful investigation. It would be a pity if all installation operatives could not be included in a comprehensive scheme.

It is evident that the cost and inconvenience incurred must be considered as an insurance against bad workmanship. The Brighton Undertaking has, in the past, carried out training work for nearby undertakings with success. The outside undertaking's operatives can be included in an undertaking's own training arrangements with very little extra in the nature of accommodation or alteration of programmes, provided the influx of operatives to be trained does not exceed the accommodation available. This, of course, is a matter of arrangement between the Training Centre and the undertakings concerned.

The cost factor thus resolves itself:

(*a*) The undertaking requiring operatives trained will have to pay wages, fares, and refreshments, plus a training charge. Since a centre will be within easy distance of an undertaking, the travelling and fares problem will not be excessive.

(*b*) The undertaking providing the training will compute a charge based on cost of materials used, plus a proportion of overheads for instructors' wages, &c.

Installation Operatives Employed Outside the Gas Industry

The installation operatives working outside the control of gas undertakings (10%) are in the main employed by contractors and builders, &c. There is little effective control over the workmanship of contracting firms outside the Gas Industry other than in those cases where specifications apply, and, therefore, the quality of the work lacks uniformity of practice.

The type of employee or master man that I have in mind could be invited to participate in the general scheme, when such a gesture would, I feel sure, encourage a greater degree of co-operation between these free-lances and the gas undertakings than now exists.

The fuller training of all types of gas employee must be an important feature of the post-war organization of the Gas Industry. The undertaking which I serve is very conscious of the necessity for staff training, and encouragement is given to both young and older personnel to attend the various training courses and to raise the standard of their workmanship thereby. All expenses are paid, and time off with pay is given to operatives attending part-time day and evening classes in different trade courses.

[Mr. Bates concluded his Paper by giving a plan showing the lines on which a Regional Training Centre could be equipped to provide for installation training, and indicating the types of training and accommodation that could be dealt with.]

Town Gas in the Glass Industry

The following is a report of the discussion which took place on the Paper by Mr. J. A. Tomes, of the Stourbridge Gas Department, to the Midland Junior Gas Association—see "JOURNAL" of Jan. 24, 31, and Feb. 7.

Mr. H. E. Grice (Messrs. Webb & Corbett) said that as to the job of burning town gas in the pot melting furnace, the question arose in this way. They had to repair the static type gas producer, and to do it without shutting down, because that means thousands of pounds thrown away and a great loss of production. He telephoned Mr. Tomes and told him that the job had to be done as quickly and as economically as possible, and fortunately for the Company a burner was made available, quite a simple one, which did the work for them. The results they had achieved surpassed anything they had thought possible. They were able to keep at work, and melt and plain their glass in much less time than it took in the usual normal way. Naturally the gas consumption was on the high side because the furnace was not designed to use town gas, but they knew they had saved money by using town gas. Regarding town gas generally for the glass industry, he thought that the price was a fundamental consideration, and the price at present was high and possibly would increase. They had to bear in mind, however, that new designs in furnaces were possible. When they got down to the right principles in design, the right type of furnace burner, and the right type of individual, he thought it was possible that in a few years town gas would supersede the use of raw coal as a fuel for any static producer.

The presence of sulphur in town gas had been one of their chief worries. The firm tried one method of removal years ago, but it was not successful. They had ample knowledge of lead bloom on glass caused by sulphur in gas. When they originally started to use town gas the sulphur content was very high. This improved until the war, when troubles again commenced, but they realized that they should forgive that to-day, as they were informed by Mr. Tomes that the Gas Department had no choice in its fuel supplies, so that the quality of the gas could not be controlled. They would observe from the results given by Mr. Tomes that the sulphur content of the gas was reduced to 3 grains per 100 cu.ft., and they did remarkably well. They had produced ware showing no bloom at all. He thought that Messrs. W. C. Holmes had done excellent work.

Mr. J. J. Priestley (W. C. Holmes & Co., Ltd.) said the removal of sulphur compounds from coal gas played an important part in the processing of glass, as the Paper had shown, and it was on that subject that he would like to make a few remarks. The development of the Holmes Maxted process was begun in 1937, and its first commercial application was at a large glassworks in the north-west of England, where there was a special need for very low sulphur gas on a tumbler machine. The whole of the gas used on the works was treated in an active carbon plant, and the sulphur compounds were reduced from about 18 grains to 4 grains per 100 cu.ft. The stream of gas required for the tumbler machine, abour 120 cu.ft. per hour, was passed through an electrically-heated converter and the sulphur compounds reduced to less than 1 grain per 100 cu.ft. The original plant was started up in February, 1942, and had run continuously except for shut-downs for repairs to glass-making machinery. Although the volume of catalyst in the plant was only 1 litre, alternate charges being used every three months, the plant had treated just short of 2,000,000 cu.ft. of gas.

As to oxidizing and reducing flames, it would appear as if a strongly oxidizing flame was more likely to put the bloom on glass, during, say, edge fusion of tumblers, than one not quite so strongly oxidizing. At Tutbury, before the installation of catalytic sulphur removal, careful flame adjustment reduced the bloom. After desulphurization, however, flames of any condition did not produce bloom, and moreover the rate of throughput could be stepped-up, as a better flame could be used. In passing it might be pointed out that the Tutbury design of plant had been superseded by a new one similar to the large ones described by Mr. Tomes, but having no heat exchanger. This did not mean they were thermally inefficient; rather the reverse, as it had been found that on small sizes any heat economy effected by a heat exchanger was offset by the increased radiation losses from the heat exchanger surface. In the figures quoted by Mr. Tomes for fuel gas used, the fuel gas consumption varied only slightly with gas throughput, and in the main could be regarded as balancing radiation losses.

The carbon deposit which eventually cloaked the catalyst and had to be removed by burning off was produced in the reaction, as mentioned by Mr. Tomes, but he thought there was also some carbon produced from partial degradation of hydrocarbon gases on the catalyst surface. It was highly reactive, and during burning off care had to be taken to control the temperature to, say, 650°C. to avoid damage to the catalyst. The ultimate life of the catalyst was, he believed, dependent only on the toughness of the support and its resistance to handling. There were samples which were supplied three years ago still quite active, which had been regenerated several times.

It could be argued that the correct place to do desulphurization was at the gas-works. This was not possible at the present time as the Government would not release steel for the construction of catalytic sulphur removal plants. But the specialized consumer requiring low sulphur gas could always do it at low cost for himself, and in this

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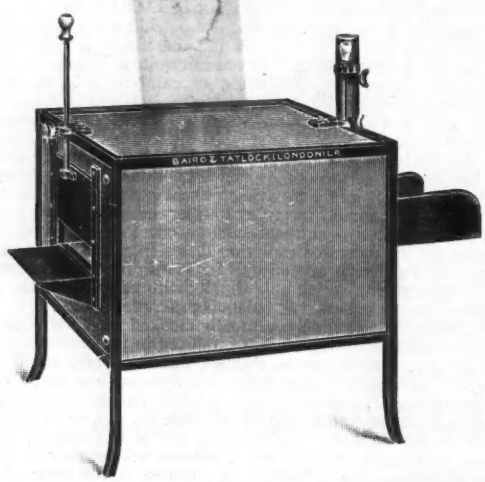

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connexion industrial ca alytic plants had an application not only in the glass trade, but also in the heat treatment of metals and the more recent development in the pottery industry, where the elimination of muffle firing would effect large heat economies.

Mr. **Tomes**, commenting on Mr. Priestley's remarks, said that he considered it essential to have sulphur-free gas for the edge fusion processes. At one stage they experienced considerable trouble with the reduction film which he had mentioned, and the simplest way to remove it was by oxidizing the atmosphere, which got rid of the black rim. He would say that the effect once produced could only be removed by acid washing. The one sure way of obtaining output and good ware, however, was to have a sulphur-free gas, and for the cracking off process and edge fusion he could see nothing superseding this treatment.

Mr. **C. L. Evans** (Birmingham) asked whether the town gas at Stourbridge contained 20 to 25 grains of sulphur per 100 cu.ft. at the inlet to the desulphurizing plant. Would not one consider that a high figure for vertical gas after benzole washing? Had anybody published any results as to the concentration of sulphur permissible in gas used for glass working? The 3 grains per 100 cu.ft. after catalytic treatment eliminated blooming. He assumed that desulphurizing with carbon would not enable them to get down to less than 8 grains. Was it possible to have, say, 6 grains per 100 cu.ft. present and obtain equally successful results?

Mr. **Tomes** replied that at the time when the figures were obtained the figure of sulphur was about 23 grains at the inlet of the desulphurizing plant. At one stage, just after putting in a benzole plant at the start of the war, they were able to get down to 12 grains of sulphur per 100 cu.ft., which very much reduced the complaints received from glass works. On account of the war they were now tied down as to the type of coal they received, and the sulphur content had gradually gone up. Hence complaints from glass manufacturers had become more frequent, and unfortunately the gas-works could do nothing about it. Figures given in the Paper were taken during a bad spell in this respect, but the fact remained that they had risen to 25 grains of sulphur in the gas which the manufacturers had to contend with. He was not aware of any published results as to the concentration of sulphur permissible in gas used for glass working. The manager of one of the glass works had stated, however, that they had another plant in Edinburgh where the sulphur was reduced to 6 grains, and there no difficulties were experienced in the way of bloom.

Mr. **S. V. D. Williams** (Warwick) mentioned that before the benzole plant was installed at Stourbridge the glass makers were worried with bloom. In that district there were working many years ago some lehrs which were fired by poor quality coal, and breakages were, he believed, then up to 7 or 8%. But when there was conversion to gas firing the percentage of breakages dropped to something like 0·5%.

Mr. **E. Harvey** (Bilston), remarking that the biggest single load which the Gas Industry was likely to get from the glass industry was in respect of melting, said it seemed hardly fair to compare towns gas on a conversion job, as suggested. Combustion was spaced round a very large area in the pot furnace, whereas in a furnace which was designed for town gas one might expect a great reduction in area and in gas consumption. Was this very large combustion space for the pots necessary for any particular purpose, and could it be reduced with a consequent increase in efficiency. Both the glass melting tanks and the pot chamber, particularly the pot type, seemed to him to have space left for combustion out of all proportion to the size of the pots. Normally the space would be 40% of the total volume of the furnace. With the glass-melting furnace the actual working space inside the pots did not amount to 5% of the heating space, and obviously the loss of heat was greater. Had any experiments been carried out with a pot furnace directly designed for the use of towns gas?

Mr. **Tomes** replied that much thought had been given to the question of cutting down the combustion space in view of the potentialities of heat efficiency. He was not aware, however, of any experiments which had been carried out firing a pot furnace directly designed for the use of town gas. The efficiency of the pot furnace such as mentioned in the Paper was about 12 to 15%, and one should remember that they could expect a loss from the pot mouths alone which might be as high as 30% when the furnace was working normally, depending on the way the pots were handled. Regarding the conversion of the furnace, he did not agree with Mr. Harvey that it was not fair to compare town gas in this respect. Although they did not want to fire a furnace of that type, they more or less had to, because it was installed there. It was necessary to draw comparisons with the existing methods of firing on this furnace to know just where they stood, since the works could not be expected to scrap such furnaces, which represented such a high capital value. Thus, if gas wanted to displace the existing method of firing, surely direct comparison was the only method of assessing the possibility of so doing. They had been fortunate in having two furnaces side by side, one fired by a coal-fired producer and the other by town gas, so that they were able to assess the actual figure of what they needed to get down to for comparison. They were working on a new design of melting furnace, but at present he would prefer to make no comments regarding this.

Mr. **K. L. Pearce** (Senior Vice-President) moved a vote of thanks to Mr. Tomes, and Mr. **A. W. Attwood** (Coventry) seconded.

"Thermal Diffusion and Separation of Gases"

In the "JOURNAL" of Jan. 31 we gave a short report of a meeting of the Scottish Junior Gas Association (Eastern District), at which Dr. K. E. Grew, of the Heriot-Watt College, Edinburgh, gave an Address on "Thermal Diffusion and its Application to the Separation of Gases." In the course of this Address the Lecturer said: In 1938 considerable interest was aroused by the announcement that isotopes of chlorine had been almost completely separated by a comparatively simple method which made use of thermal diffusion. When a mixture of two gases is not at a uniform temperature the composition is not uniform; usually the lighter of the two kinds of molecules concentrates where the temperature is highest, and the heavier in the colder parts.

This partial separation is due to thermal diffusion. For example, if a mixture of hydrogen and nitrogen in equal proportions is contained in two bulbs with a connecting tube, and the temperature of one bulb is raised to 400°C. while the other bulb is kept at 20°C., there will be, when equilibrium is reached, about 7% more hydrogen in the hot tube than in the cold tube. With this difference in composition the thermal diffusion effect due to temperature gradient is balanced by the ordinary diffusion due to the concentration gradient.

The amount of separation obtainable in this way depends on four factors:

1. The absolute temperatures of the hot and cold bulbs, T_1, T_2.
2. The ratio of the molecular weights of the compounds.
3. The relative proportions of the components.
4. The nature of the forces arising at collisions between the molecules.

The last three factors may be included in a single quantity denoted by k_r. In many cases k_r can be considered independent of temperature, and then the separation is theoretically proportional to $\log T_1/T_2$. Experiment confirms this proportionality provided the temperature is well above the critical temperature of either gas. The separation in general increases as the ratio of the molecular weights of the components increase. It varies with composition in such a way that it tends to zero as the concentration of either component tends to zero, the maximum value occurring usually at about 60% of the lighter component.

One of the interesting aspects of thermal diffusion is the information which it gives about forces which arise at the impact of molecules. The separation can be calculated theoretically for certain simple types of molecule—*e.g.*, those which interact like hard spheres—and a comparison of this theoretical value with that found experimentally enables an estimate to be made of the relative "hardness" of different molecules.

A second aspect of thermal diffusion, and one which is of more immediate practical importance, is its application to the almost complete separation of two gases. Thermal diffusion alone can produce only a partial separation of the component of a gas mixture, since it is always opposed by the remixing effect of ordinary diffusion. But, reverting to the illustration given earlier of a hydrogen-nitrogen mixture in two bulbs at different temperatures, it can be seen that the concentration of hydrogen in the hot bulb could be progressively increased if, after thermal diffusion has occurred, the gas in the cold tube were swept out and replaced with a mixture of the same composition as that in the hot bulb, so that further separation could occur; and so on repeatedly.

Clusius and Dickel in 1938 saw that this process, the repeated juxtaposition of samples of the gas mixture of approximately the same composition, would occur in a vertical tube heated along its axis. Thermal diffusion takes place transversely, and the gas near the axis, enriched in the lighter component, rises up the tube. As it ascends it moves past a descending stream of cold gas near the walls in which the concentration of the lighter component increases towards the upper end of the tube. The lighter component thus accumulates at the top of the tube and the heavier at the bottom. With this method Clusius and Dickel have separated almost completely the isotopes of chlorine and gas mixtures as hydrogen-carbon dioxide. This method has considerable possibilities, especially where the gases to be separated are already at a high temperature so that they themselves may maintain the requisite temperature gradient.

Mr. **W. Masterton** (Edinburgh), in the course of a discussion which took place on the Address, said that of all the phenomena of physics, thermal diffusion was one of the most interesting. As the speaker had indicated, the study of the subject began with those who were absorbed in the kinetic theory of gases. Then it had passed into the hands of those atom tormenters who wanted to separate isotopes, but he was glad to observe that Dr. Grew had suggested that it might become of industrial significance, and thereby pass into the hands of vandal utilitarians like themselves. The Clusius and Dickel tube reminded him of another tube, the St.Clair Deville "hot and cold" tube, the only significant difference being that the latter was horizontal and the former vertical.

He thought it probable that, unknown, thermal diffusion had been playing a part in the Deville tube. It seemed strange that the Clusius and Dickel tube was like something they had had for a long time.

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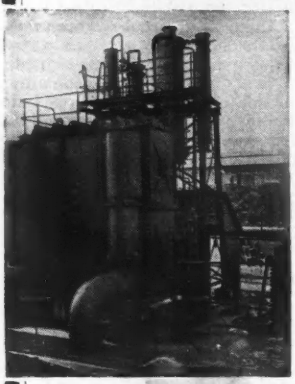

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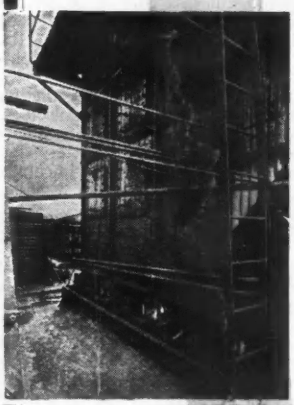

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Products Prices—Stocks and Shares

The London Market Feb. 12.

There are no changes to report in the prices of Coal Tar Products.

A Government Order came into effect on March 1 controlling the price of Benzole and Coal Spirit and replacing the Control of Coal Tar Naphtha and Xylole Order, 1943.

The Order is known as the Control of Benzole and Coal Spirit Order, 1944 (S.R. & O. 1944, No. 172).*

By this Order the price of Motor Benzole is fixed at 2s. per gallon. The Order also lays down the method of evaluating Crude Benzole.

The Order also calls for periodical returns to the Ministry of Fuel and Power from all producers of Crude and Refined Benzole.

In connexion with the Coal Tar Products market, the Government Order designated the Control of Toluene (No. 4) Order, 1944 (S. R. & O. 1944, No. 170), contains an amendment of the Control of Toluene (No. 3) Order, 1943.

Attention is called to a new Government Order, which amends the price of Toluene as from Sept. 1, 1944. The Order is entitled, The Control of Benzole and Coal Spirit (No. 2) Order, 1944 (S. R. & O., No. 988).

The only change in connexion with the prices of Coal Tar Products refers to Naphthalene. A new Government Order, entitled the Coal Tar Products Prices (No. 2) Order, 1944 (S. R. & O., 1944, No. 1051), allows increases in the maximum prices for all forms of Naphthalene. The new Order came into force on Sept. 22, 1944.

* Slightly amended by Control of Benzole and Coal Spirit (No. 2) Order, 1944, which amendments came into force on Oct. 1.

The Provinces Feb. 12.

The average prices of gas-works products during the week were: Pitch and Crude Tar,* Toluole, naked, North, 90's, 2s. to 2s. 2½d., pure, 2s. 9d. (now controlled by S. R. & O. 1944, No. 988, operative from Sept. 1, 1944. Benzole and Coal Spirit, also Coal Tar Naphtha and Xylole, are now controlled by the Control of Benzole and Coal Spirit Order, 1944, dated Feb. 18, 1944, S. R. & O. 1944, No. 172, operative from March 1, and S. R. & O. 1944, No. 988, part 1, operative from Oct. 1, 1944, Carbolic acid, 60's, anthracene, creosote oil (hydrogenation), coal tar oils (timber preservation, &c.), and strained anthracene oil controlled by the Coal Tar Products Prices Order, 1943, dated Oct. 20, 1943 (S. R. & O. 1943, No. 1528), operative from Nov. 15, 1943, Naphthalene now controlled under S. R. & O. 1944, No. 1051, operative from Sept. 22, 1944.

* In regard to pitch and crude tar prices we would ask readers to refer to the editorial note on p. 396 of the "JOURNAL" for Sept. 10, 1941.

Scotland Feb. 10.

Deliveries against contract are substantial, but spot business is irregular. Refined tar:* Yield to Distillers is 4½d. per gallon *ex* Works, naked. Creosote oil: Timber preserving quality,* 5½d. to 6½d.; hydrogenation oil,* 5½d.; low gravity or virgin oil,† 7½d. to 7½d.; benzole absorbing oil,* 6½d. to 8d. per gallon. Refined cresylic acid* is 3s. 6d. to 4s. 6d. per gallon *ex* Works, naked, according to quality. Crude naphtha†: 6½d. to 7d. per gallon. Solvent naphtha*: Basic prices delivered in bulk, 90/160 grade, 2s. 8d., and 90/190 Heavy naphtha, Unrectified, 1s. 10½d.; Rectified, 2s. 2d. per gallon. Pyridine†: 90/160 grade, 13s., and 90/140 grade, 15s. per gallon.

* Price controlled. † Uncontrolled.

The volume of business among gas stocks and shares was not so heavy last week, but prices continued to be well maintained, the only reaction occurring in Commercial ord., which changed hands 2 points down at 66. A feature was the sharp rise of 5 points to 125½ in Liverpool ordinary in London, while at the Provincial Exchanges it will be seen below that Derby closed 3 points up on the month, the price quoted being that on the Nottingham Exchange, which only publishes lists monthly.

The following price changes took place during the week:

OFFICIAL LIST		
Associated Gas & Water Undertakings Deferred	23/6—24/6	+-/3d.
Bournemouth max. div. (x.d.)	157—162	Feb. 5
Commercial Ord.	65—70	−2
Liverpool Ord.	124—127	+5
Mid-Southern Utility 4 p.c. Pref.	100—105	+1
Portsmouth Cons. (x.d.)	145—150	Feb. 5
South Metropolitan Ord.	90—93	+1
South Suburban Ord. (x.d.)	115—120	Feb. 5
Ditto 5 p.c. Pref. (x.d.)	110—115	"
Ditto 4 p.c. Pref. (x.d.)	98—103	"
Ditto 3½ p.c. Red. Pref. (x.d.)	93—98	"
Southampton Ord. (x.d.)	105—110	"
United Kingdom Ord.	22/9—23/9	+-/6d.
PROVINCIAL EXCHANGES		
Derby Cons.	139—135	+3
Newcastle Units	26/—26/6	+-/3d.
Ditto 4 p.c. Pref.	103½—105½	−½

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Gas Cookers, Fires, Radiators, etc.
Large-Scale Cooking Equipment
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Gas Calorimeters, Gravitometers and Gas Density Recorders, Aeration Test Burners, Gauges and Recorders, Wet Meters, Gas Analysers Photometers, Thermometers.

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Address No. 9404, "GAS JOURNAL," 51, High Street, Esher, Surrey.

APPOINTMENTS VACANT

Revised.

COUNTY COUNCIL OF THE COUNTY OF LANARK

(GAS UNDERTAKING)

DISTRIBUTION ENGINEER

APPLICATIONS are invited for the position of DISTRIBUTION ENGINEER in the Gas Undertaking.
Candidates must be duly qualified in all branches of Gas Supply and must possess recognized technical qualifications. Candidates must also have thorough technical knowledge and sound practical experience of high and low pressure distribution, and of the general application of gas for domestic, industrial and commercial purposes. The person appointed must be able to organize and supervise Distribution Work, Workshop Practice, and prepare plans and estimates.
The appointment will be subject to the provisions of the Local Government Superannuation (Scotland) Act, 1937, and the successful candidate will be required to pass a medical examination.
Applications, stating Age, Qualifications, Experience, Salary required, and present position under the E.W.O. and National Service, and accompanied by *copies* of three recent Testimonials with envelope endorsed "Distribution Engineer," should be addressed to the undersigned at Lanarkshire House, 191, Ingram Street, Glasgow, C. 1, and delivered not later than Friday, February 23, 1945.

WM. C. BROWNLIE,
County Clerk.

BOROUGH OF CHESTERFIELD

(GAS DEPARTMENT)

APPLICATIONS are invited for the position of MAINS SUPERINTENDENT at the above Works. Applicants must have had practical experience in the laying of High and Low Pressure Mains in Cast Iron and Steel and also in the installation and maintenance of District Governors.
The position is subject to the provisions of the Local Government Superannuation Act, 1937, and the successful applicant must pass a Medical Examination.
Wages £5 5s. per week, plus cost of living bonus. Good prospects of obtaining a house at reasonable rent. Applications, stating Age, Experience and position regarding the Essential Works Order, together with *copies* of not more than two Testimonials, to be forwarded to the undersigned not later than February 17, 1945.

RICHARD CLEGG,
Town Clerk.

MAINTENANCE FITTER

REQUIRED for a Gas-Works, capacity 250,000 cu.ft. per day, an experienced MAINTENANCE FITTER, with good knowledge of the working of all Gas-works plant and capable of general repairs to same, including Gas and Steam Engines, Exhausters, Pumps, Compressors, &c.
Would be required to take charge during the absence of the Works Manager.
Permanent situation for suitable man.
Applications, stating Age, Experience, Wages required, and position under Essential Works Order to H. Banks, Chief Engineer, Northampton Gaslight Company, Abington Street, Northampton.

WANTED.—ASSISTANT (indoor) for Sales Department of Gas Appliance Manufacturers. Apply stating Age, Experience and Salary required to The Sales Manager, The Parkinson Stove Co., Ltd., Stechford, Birmingham, 9.

WANTED.—Mains and Service layers; 86s. 8d. for 47-hour week. Gas Industry conditions.
Apply to N. B. Thompson, Engineer and General Manager, North Cheshire and District Gas Company, Raglan Street, Hyde, Cheshire.

APPOINTMENTS VACANT
(continued)

WANTED for duration, first class GASFITTERS. Cyclists. Apply Romford Gas Company, Nursery Walk, Romford, Essex.

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APPLICATIONS are invited for the above position at the Company's Portslade Works. Applicants should have a thorough knowledge of Horizontal Carbonizing Practice and Water Gas Manufacture, and will be required to do seven eight-hour shifts per week with appropriate holidays. The salary offered is £265 4s. per annum plus £75 War Bonus.
Applications, stating Age, present position, Experience and Training, position in regard to Military Service and Essential Works Orders, should be sent not later than February 26, 1945, to Manufacturing and Mechanical Engineer, Gas-Works, Portslade-by-Sea, Sussex.

CONTRACTS OPEN

CITY OF MANCHESTER

THE Gas Committee invites Tenders for the Supply and Delivery of a LOCOMOTIVE STEAM SHUNTING CRANE.
Particulars and form of tender may be obtained on application to Mr. J. H. Cadman, Commercial Manager and Secretary, Gas Department, Town Hall, Manchester, 2.
Sealed tenders in the envelope provided, addressed to the Chairman of the Gas Committee, endorsed "Locomotive Steam Shunting Crane," must be delivered at the Gas Office, Town Hall, Manchester, 2, not later than 10 a.m. on Friday, March 9, 1945.
The Committee does not bind itself to accept the lowest or any tender.

Town Hall, Manchester. February, 1945.

P. B. DINGLE,
Town Clerk.

COUNTY BOROUGH OF BURY

(GAS DEPARTMENT)

TENDERS are invited for the following plant:
(1) One 60 k.w. STEAM DRIVEN D.C. GENERATING SET.
(2) One LANCASHIRE STEAM BOILER.
Particulars and specifications may be obtained from the Gas Engineer and General Manager, Gas-Works, Bury.
Tenders, enclosed in plain sealed envelopes, not bearing any name or mark to indicate the sender, and endorsed "Tender for Gas-Works Plant," should be sent to the undersigned not later than February 26, 1945.
The Corporation do not bind themselves to accept the lowest or any Tender.

Municipal Offices, Bank Street, Bury, Lancs.

H. D. A. ROBERTSON,
Town Clerk.

COUNTY BOROUGH OF BIRKENHEAD

(GAS DEPARTMENT)

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Tender to be submitted in three parts:
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(*b*) Spencer-Bonecourt WASTE HEAT BOILER with all fittings.
(*c*) COKE HANDLING PLANT.
Further particulars may be obtained on application to the Gas Engineer, Gas Offices, Hind Street, Birkenhead.
Tenders, in plain sealed envelope, endorsed "Tender for Carburetted Water Gas Plant," must be received by me not later than 9 a.m. on Saturday, March 3, 1945.

Town Hall, Birkenhead. February, 1945.

E. W. TAME,
Town Clerk.

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FOR SALE.—Briggs Vertical Gas Fired Boiler, 6 ft. 6 in. by 3 ft.; 30 h.p. H.S. Enclosed Steam Engine; Calorifier, 7 ft. by 3 ft.; Marshall Horizontal Steam Engine, 10 in. by 14 in.; Cylindrical Tank, 17 ft. by 6 ft.; Rectangular Tank, 26 ft. by 10 ft. by 8 ft.
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The gas needs a penny," cried OO.
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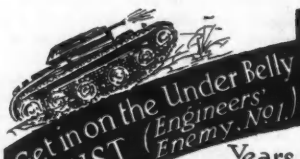
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Steel Wires, Ropes & Cables running in and out of Water, Gas, Sulphurous Fumes, etc. will never RUST if treated with
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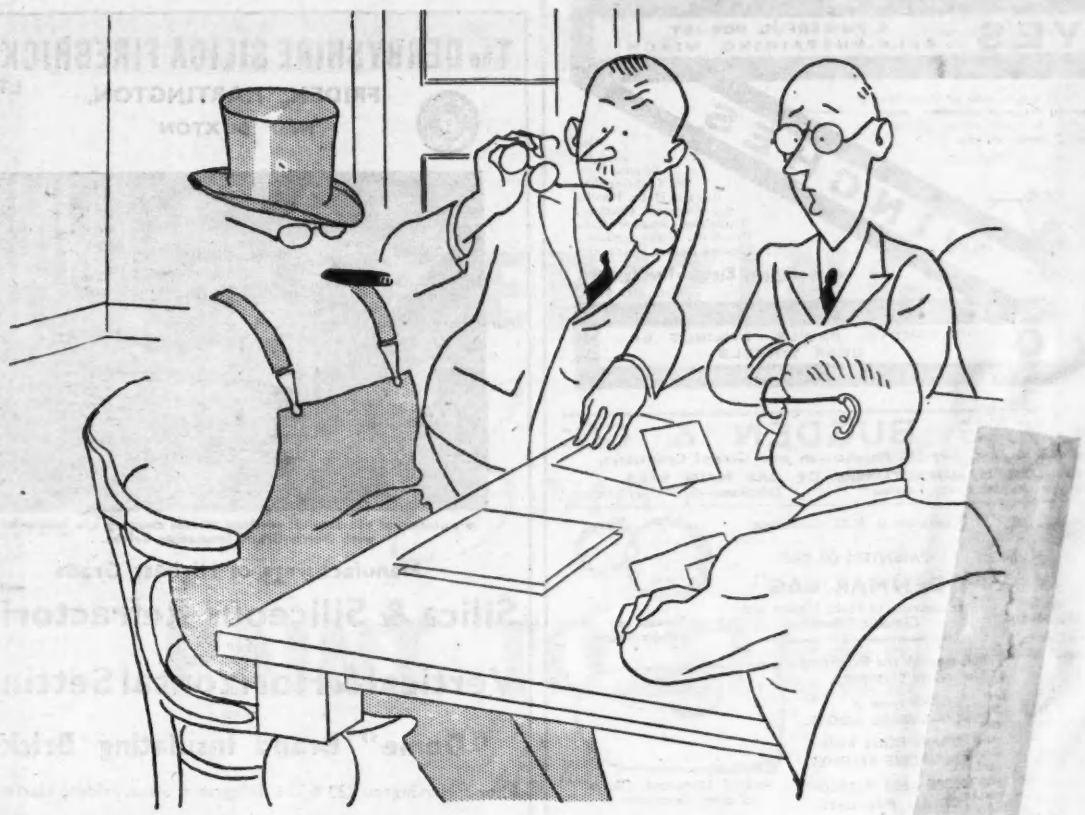

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Of course you know the answer to that in your own place, but how much more could you tell the Ministry about your system for ensuring the utmost fuel efficiency? Only the constant personal vigilance of directors and managers can keep it fully keyed up anywhere. What *have* you to show for it all—anything that will bear comparison with the following?

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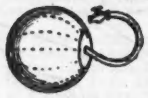

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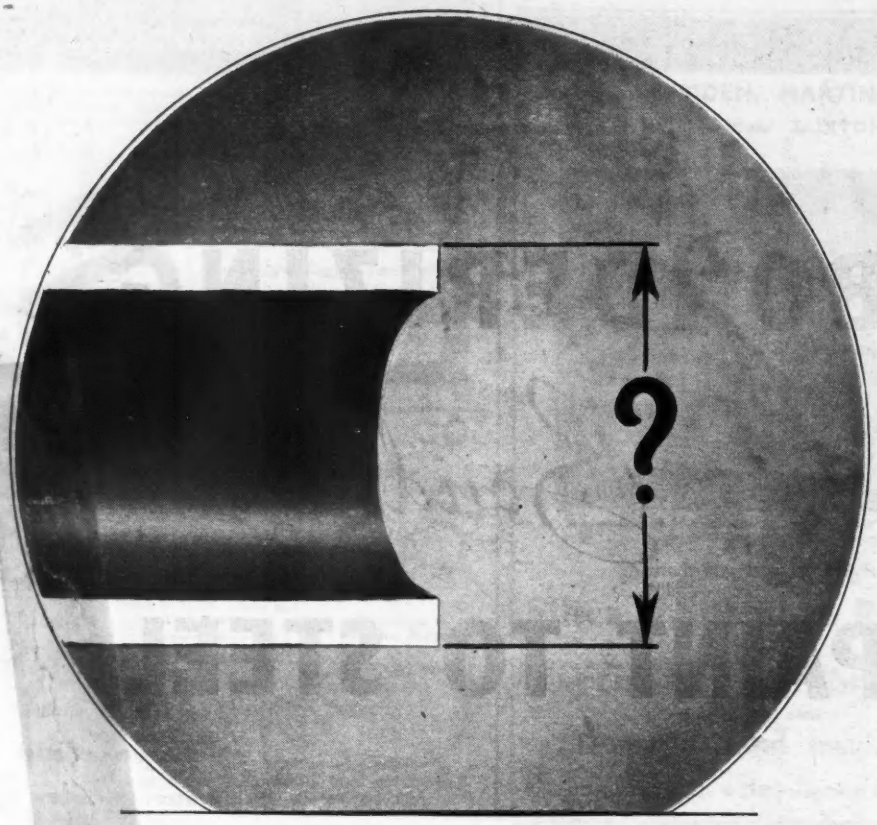

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We offer our full collaboration with your engineers in the choice of tubes, preferably at an early stage of design.

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Full lists of standard sizes, limits and qualities will be sent on application.

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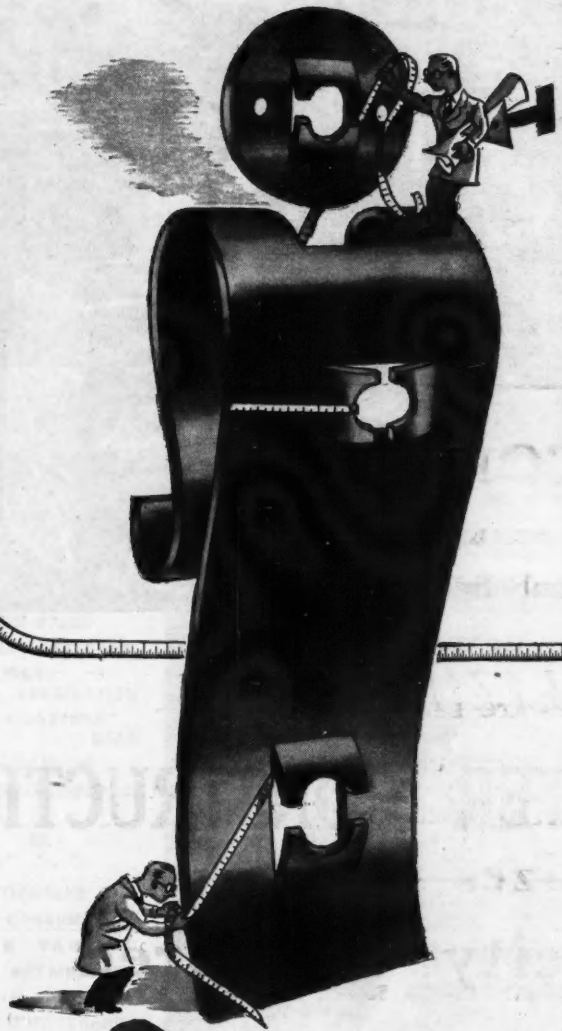

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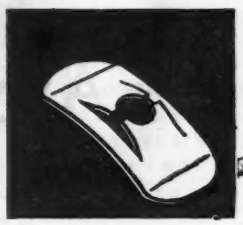

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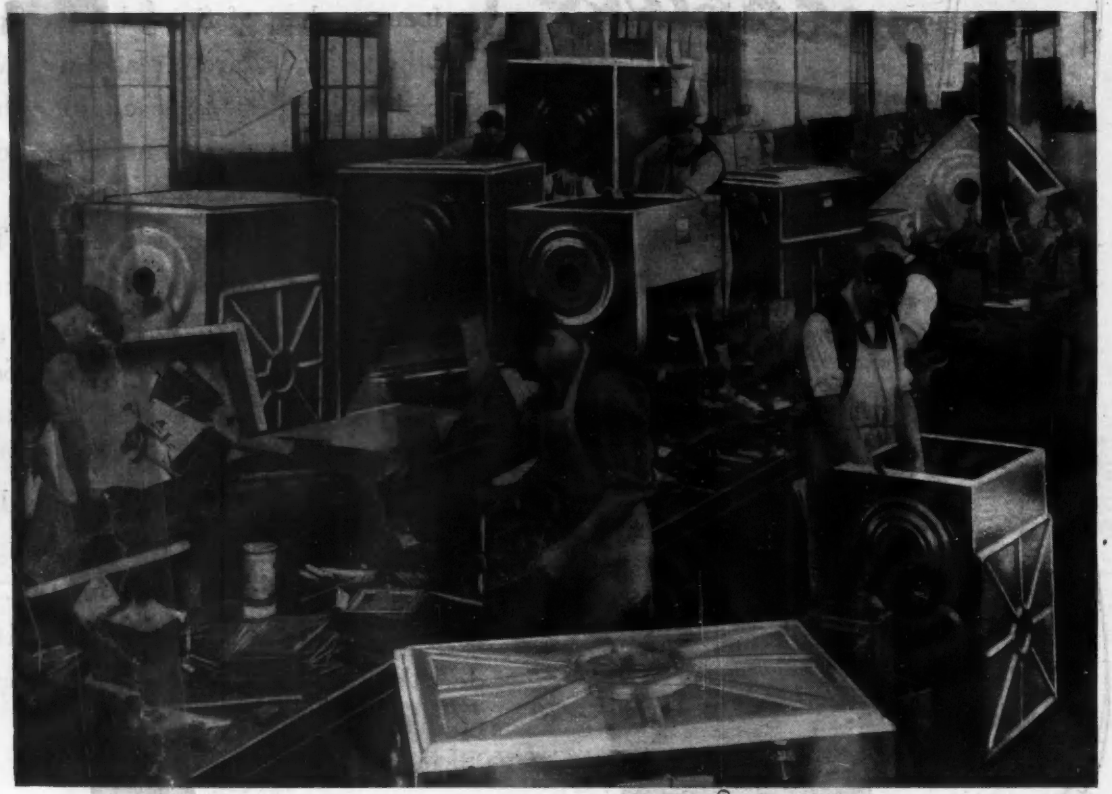

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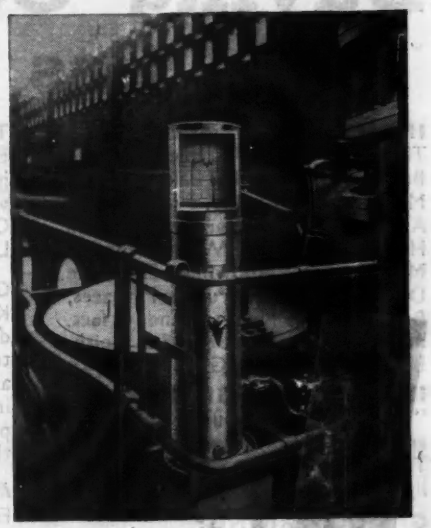

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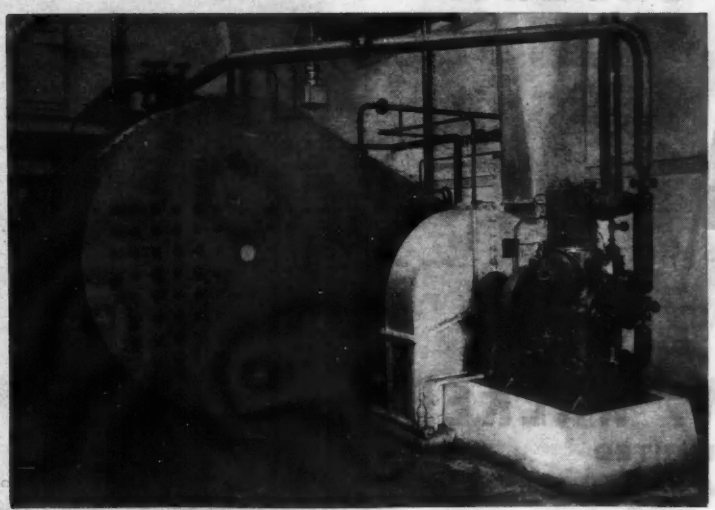

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GAS GOVERNING:
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WATER HEATING:
The "KB" Gas-fired Boiler is a powerful sectional boiler capable of heating large quantities of water quickly and at low cost. See Keith-Blackman's Booklet G141.

TEMPERATURE CONTROL:
Every apparatus in which liquid is heated by gas should be equipped with a "Keith" Thermostat Gas Controller. See Keith-Blackman's List G133.

GAS and AIR MIXING:
Keith-Blackman's List G117 gives details of "Keith" Auto Mixture Controls, which correctly mix gas and air and maintain correct proportions irrespective of changes in gas or air pressures, and in the resistance of the burners and furnace.

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For cooling workers at hot spaces in retort house, etc., instal "KB" Man-cooling Fans (as Booklet V201), or "Keith" Fans (as Cat. K1).

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The correct device for this job is a "Keith" Gas Meter Protection Valve. See Keith-Blackman's Booklet G69.

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"KB" Gas-fired Unit Heaters are easily and quickly installed for warming Workshops, etc. See Keith-Blackman's Booklet V181.

VENTILATION:
Good ventilation is essential, and "Blackman" Propeller Fans (as Cat. V1), or "Keith" Centrifugal Fans (as Cat. K1) will ensure good ventilation.

GAS BOOSTING:
"KB" Fans for this purpose are made in various types and sizes for dealing with from 5,000 up to 1,000,000 cu. ft. per hour. See Keith-Blackman's Cat. V49.

INDUCED DRAUGHT:
A good draught on boiler fires is essential to economical steam production. A "Keith" Fan will provide the necessary good draught. See Keith-Blackman's Booklet K81.

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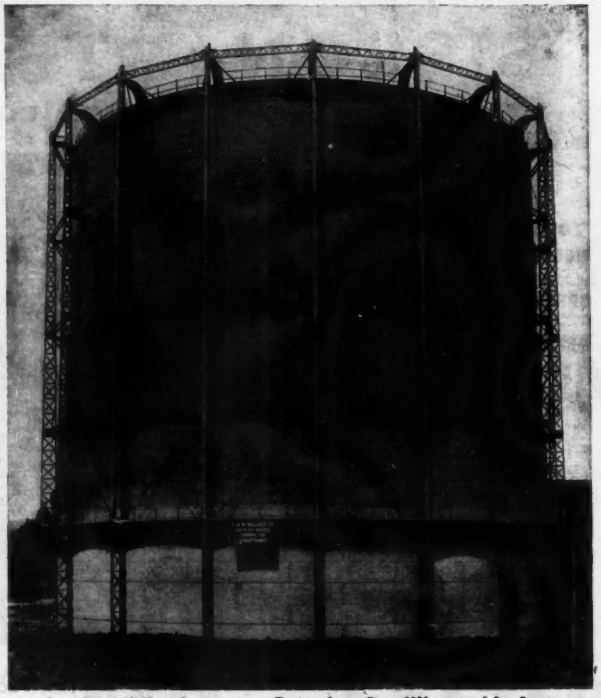

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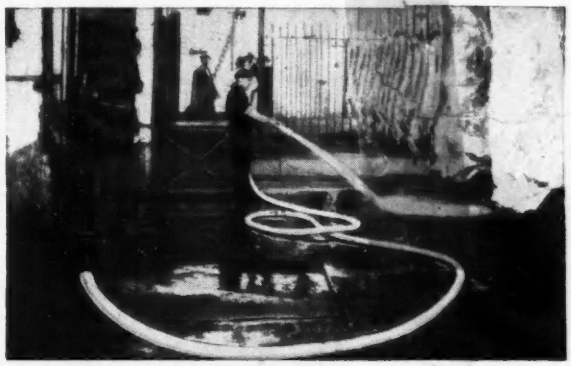

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PUMPS

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Fig. 705. "SINGLE-RAM" STEAM-PUMP.

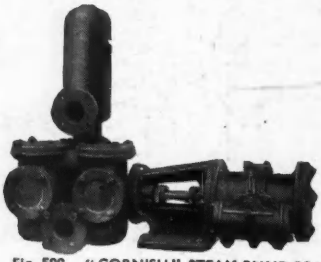

Fig. 598. "CORNISH" STEAM-PUMP FOR BOILER FEEDING, &c.

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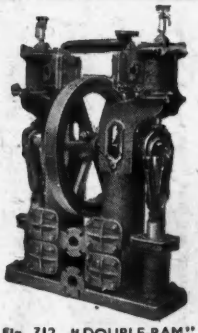

Fig. 712. "DOUBLE-RAM" STEAM-PUMP.

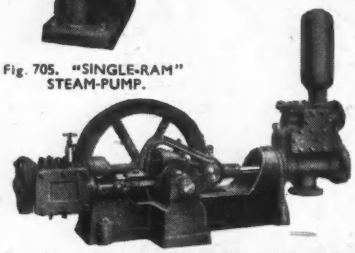

Fig. 680. "RELIABLE" PUMPING ENGINE FOR THIN TAR, AMMONIACAL LIQUOR, BENZOLE LIGHT, OILS AND WATER

Fig. 685. "RELIABLE" STEAM-PUMP FOR TAR AND ALL THICK FLUIDS.

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